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or story:

Winter slip forming

Page 36

SCIENCES

## WINTER WORK

- 10 Booster pump cuts dredging cost
- 15 Building methods that defy cold weather
- 22 Snow fighting in mountain passes

# CONTRACTORS and ENGINEERS

MAGAZINE OF MODERN CONSTRUCTION

OCTOBER 1960



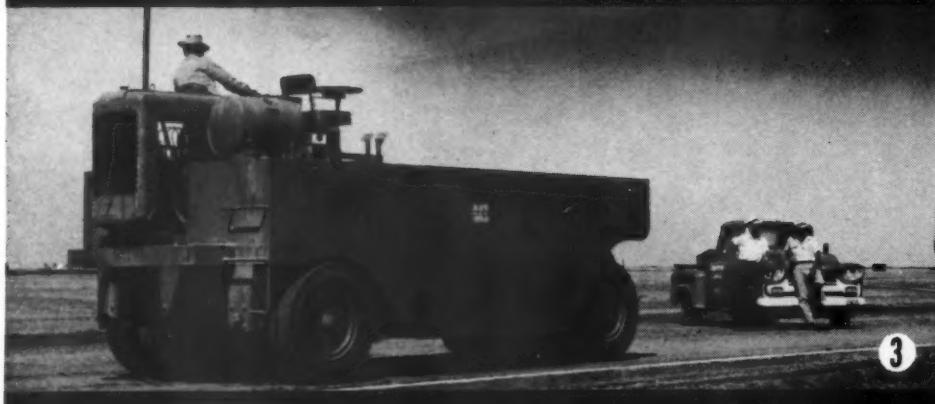
# those who know go BMCO...



1



2



3

1 M. B. Killian and Jack House; partners, Killian-House Co., cut compaction time in half with BMCO SPR-13's on the Interstate Highway 35 expressway in San Antonio, Texas.

2 V. P. Stewart; vice president and general manager, San Xavier Rock and Sand Co.; tried out numerous compactors before choosing BMCO SPR-13's for the Route 84 Freeway in Tucson, Arizona.

3 John E. Tiger; Griffith Company superintendent, Los Angeles; solved a tough compaction problem in fine content soil with a BMCO 25T11 on the LeMoore Naval Station project in Fresno, California.

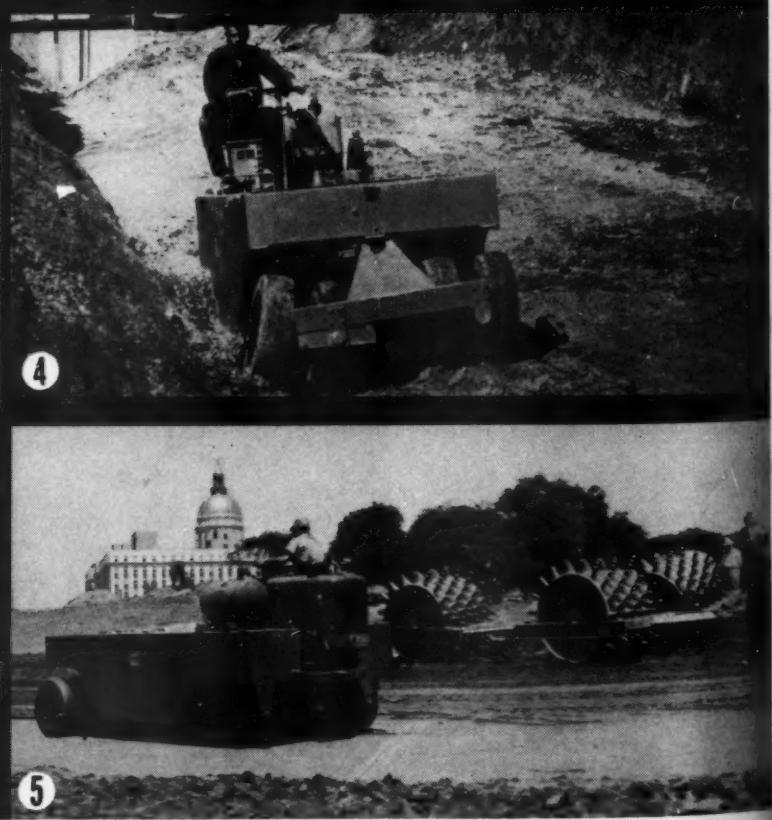
4 Contractor C. Montgomery made a difficult compaction job easy with a BMCO SPR-9 on Storm Sewer Project 58B in San Antonio, Texas.

5 Contractor H. D. Gregory used BMCO's SPR-13, self-propelled roller, and HD-114, 60" triple-drum sheepfoot roller, to attain 100% compaction on Atlanta, Georgia's Downtown Freeway project.

During 1960, more and more contractors, nationwide, have turned to BMCO for the most versatile, most dependable and most complete lines of compaction equipment available . . . anywhere. This year, or next, it will pay you to investigate BMCO before you invest in any compaction equipment.



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5

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# CONTRACTORS and ENGINEERS

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Steelwork on exposition center.

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### COVER:

Heated concrete and a slip form with upper and lower levels that were closed in with Visqueen made concrete work on these cement silos feasible in winter. A Gold Medal tower delivers concrete to crews; the slip-form deck is being used as the roof form. Openings at bases of silos are closed with Visqueen. *Page 36.*

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# Editorial



## Planning for winter—and waterways

This October Winter Work issue has for one of its objectives the purpose of reminding the reader that winter is just around the corner. The time is not too soon for contractors to look ahead and prepare for the cold blasts, freezing weather, and the snows that may be expected over most of our northern states within the next few months. A little planning at this season of the year may save many a headache in late November and December.

Have you ordered your antifreeze solutions for your trucks and equipment fleets? Are your salamanders and heating units cleaned and in working order? Do you have enough of them on hand to satisfy your job needs through the winter? Have your tarps and wind-breaks been checked for rips and tears? Is your heating equipment in shape for concreting operations in adverse weather? Do you need admixtures, quick-starting solutions, special oils and lubricants?

These are just a sample of the questions you should be asking yourself if you are planning to continue your operations during the coming cold weather.

All construction needs planning, whether winter or summer, and this need for forethought brings to mind the report recently released through the Senate Select Committee on National Water Resources on improvements and additions to our navigable inland waterways. Sen. Robert S. Kerr (D., Okla.), chairman of the committee, urges that thousands of more miles of American rivers be opened to navigation in order to meet the growing demands on the transportation system of the nation. The senator pointed out that river commerce needs to be expanded, as well as that carried by highways, railroads, planes, and pipelines. The report, prepared by the U. S. Army Corps of Engineers, estimated that for \$8 billion a total of 3,000 additional miles of navigable

waterways could be made available, particularly to areas now land-locked.

Water transport, though slower, might be the answer to the cross-country movement of intercontinental ballistic missiles. Last January, the Department of Defense and the Department of Commerce, Bureau of Public Roads, decided to increase the vertical clearance of bridges on the Interstate Highway System from 14 to 16 feet so that these big ICBM's might be hauled by truck. To raise existing bridges, authorized and built after July 1, 1956, and before the 16-foot clearance was established, would cost \$176 million, according to BPR estimates.

But the missile picture is constantly changing. The Saturn booster, for instance, is 80 feet long and 21 feet in diameter—much too big to be put on a trailer and trucked under overhead structures, even with their increased clearances. Railroads are not feasible either for the accommodation of such giant missiles. So barring some new and unrealized concept in transportation, the water route may solve the problem.

Many new waterways have been proposed that would have a powerful impact on the areas they would serve. One to connect the Great Lakes with the Ohio River could carry deep-draft ocean vessels to one of the country's major industrial inland areas. A suggested short cut between Lake Erie and Lake Michigan across the southern tier of Michigan would eliminate hours of sailing time for vessels bound for Chicago from the east. Dallas, Texas, could have water access to the Gulf of Mexico by way of the Trinity River. The possibilities are boundless, within reason, and economically justifiable in consideration of the growing population and development of the nation. Let us not make the mistake of failing to plan far enough in advance for our needs of the years ahead.

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CONTRACTORS AND ENGINEERS

## Business Comment

## Plan ahead

Although in the eight years of the Eisenhower administration the nation has spent over \$500 billion for construction work, both candidates have hastened to establish early in the campaign that they intend to step up the rate at which "public needs" are met. Public needs are, to a great extent, construction needs. It is likely, then, that no matter who wins the election, direct federal influence will tend to increase construction volume in the years immediately ahead.

An even stronger impetus to construction volume may come from the prevailing mood of public confidence. No one talks any more—as many did just 20 years ago—of a "mature" economy that has passed its peak. Gross National Product passed the \$500 billion mark early this year, and the likelihood of economic expansion in the sixties is taken as an article of faith. Before the decade ends, the construction industry will be providing public and private facilities of all kinds for anywhere from 203 to 219 million people.

Two well publicized economic reports have estimated government expenditure levels that are likely to prevail in the late sixties.

According to the Rockefeller\* report—which is essentially a suggested program for the future—total road-construction spending should be at least \$10.5 billion by 1967 and could go as high as \$12.0 billion. Spending for urban renewal should be at minimum \$4.0 billion and could reach \$7.0 billion.

The second study—by the Committee for Economic Development\*\*—sets its "medium" 1967 forecast at \$13.3 billion for highways and \$1.3 billion for urban renewal.

Given the current political climate, these goals and expectations may well materialize. If so, construction is destined to be front and center on the economic stage of the sixties as it was throughout the fifties.

It should be kept in mind, however, that widespread recognition of the social importance of meeting public needs does not mean that the necessary construction programs will be authorized and implemented without opposition and delay. Competition for the tax dollar is sure to subject future programs to the kind of sniping now afflicting the federal-aid highway program. Because of its basic soundness of concept, the road program has withstood this criticism, and no responsible official of government has ever remotely advocated curtailment.

But it is not hard to imagine how an ill-conceived future public works program might be depicted as a political scandal to discredit the comprehensive "program" concept for

fulfilling public needs. The alternative piecemeal approach would mean not only generally lower construction levels but also interruptions in work volume that would play havoc with profits.

For the sake of the industry's economic health, then, it is important that the risks of inadvertent inefficiency and waste be minimized by good planning.

Good planning is, in the first place, long-range planning. This gives neighboring and overlapping governments, interested industries, and just plain citizens the opportunity to come together on policies and goals and to hammer out mutually satisfactory programs.

Another benefit is more realistic engineering and construction schedules. Construction proceeds after

a thorough appreciation has been attained of the problems presented by the site and right-of-way.

Long-range planning also means cheaper financing through "sequence" financing, by avoiding unforeseen fiscal needs, and by timing funding operations to take advantage of favorable market conditions.

Good planning is also comprehensive. A comprehensive plan makes individual governments on all levels look beyond their own objectives.

This leads to their recognition that their competing plans have a common interest. Closely related public-service projects can be combined. Most important of all, particular jobs are scheduled on a priority rather than on a haphazard "pet-project" basis.



Laying second course of plant-mix Texaco Asphaltic Concrete pavement on highway through Ocala National Forest.

View of right of way cut through virgin forest for new highway. Limerock foundation at left is ready for Texaco Asphalt pavement.



Contractor: MARION CONSTRUCTION COMPANY, Ocala, Fla.

## Builds ASPHALT highway through virgin forest

The Florida State Road Department has constructed 18 miles of Asphalt-paved highway through the Ocala National Forest, in the state's northeastern corner. All but half a mile of this highway is located on new right of way, cut through virgin forest and swamp.

Plant-mixed Texaco Asphaltic Concrete, laid in two courses with a combined thickness of three inches, gives this highway a highly durable and resilient surface. Supporting it is an 8½-inch foundation of limerock. A Texaco Asphaltic Concrete pavement like this one withstands hard usage year after year with a minimum of maintenance. It is speedily laid and ready for traffic, because it

requires no time-consuming curing period. Motorists prefer the velvet smooth riding quality of its resilient, joint-free surface. Thanks to its skid-resistant texture and the sharp visibility of traffic lines on its dark surface, Texaco Asphaltic Concrete greatly reduces the danger of accidents.

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\* Rockefeller Brothers Fund, *The Challenge to America: Its Economic and Social Aspects*, New York, 1958.

\*\* Committee for Economic Development, *Friends in Public Expenditures in the Next Decade*, New York, April 1959.

# Surveying Washington

by E. E. Halmos, Jr.



## Construction industry benefits by defeat of some legislation

Contractors should look beyond pure politics for the reasons behind the failure of almost every piece of construction legislation that was presented to the now dead 86th Congress. There are lessons to be learned, in the way of assessing future Congresses, and in getting approval of laws the construction industry wants.

What did go through was largely money bills, necessary to keep the government's activities running.

That isn't to say that the record is bad. In some aspects, it seems far better for the industry that certain things didn't receive approval—such as the "common situs" picketing bills, efforts to permit an increase in imports of construction machinery, attempts to license engineers under a federal statute, and the minimum-wage laws.

But the reasons for the failures in

these and in some important money-carrying bills as school construction, urban renewal, and housing are worth more careful study.

Some of them—like "situs picketing" (which would have permitted a union to strike the whole job, even if the dispute involved only one of many subcontractors) and the import relaxation—went down before a concerted, well led attack by industry elements, which presented their case clearly and consistently in the right places: before the House and Senate committees that must pass on all legislation before it gets to the floor for votes. The cases were well made, and the bills never got out of full committees. The same goes for another bill, which would have amended military procurement laws in such a way that engineers and architects would have been forced to bid on government work.

School-aid proponents, whatever

the merits of their case, simply didn't succeed in marshaling enough facts to convince Congress that there is a real demonstrable need for a heavy infusion of federal money at this time.

On housing, proponents of more federal aid for construction—through schemes such as an additional \$1 billion purchasing power for Fannie Mae—lost their attack on the rocks of the hard facts being turned up by the Census Bureau. These seem to show that housing is outstripping population in many areas (including, significantly, Washington itself) by a considerable degree, and a lot of congressmen just weren't convinced

definition of what constitutes "commerce"—a definition that even the Senate bill's backers couldn't claim to the satisfaction of very many congressmen, but which would seem to have included virtually any business at all.

The various suggestions for a federal "Department of Urban Affairs" and similar setups failed because of two circumstances: the time isn't ripe, and backers didn't have enough facts to back up their plans.

All of this, then, adds up to the two facts that any businessman should keep in mind, in connection with legislation that he wants or opposes:

1. Don't underestimate Congress. Individually, some congressmen may be woolly-headed, easily led, even venal. But collectively, Congress isn't easily fooled, and collectively it acts at most times—with responsibility.

2. With that in mind, don't go to Washington or "write your congressman" without knowing what you are talking about and being able to prove your point with solid facts and figures. And make sure that you direct your comment to the right man and the right committee.



that the need warranted the extra government spending.

The minimum-wage bill, which would have brought most construction organizations under the law through various means, really failed because of a complex and confusing

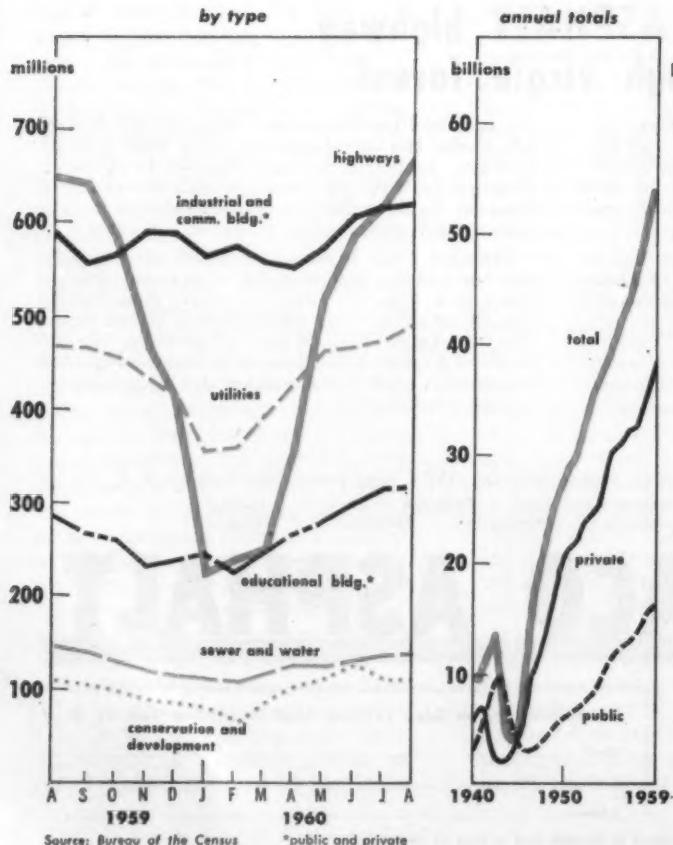
## Appropriations bills okayed for many types of projects

Of course, construction didn't fare too badly, on the handful of bills that did go through.

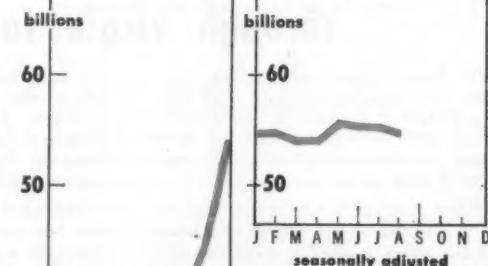
These included the \$3.9 billion public-works bill; more than \$4.5 billion for the departments of Labor and

## Industry Trends

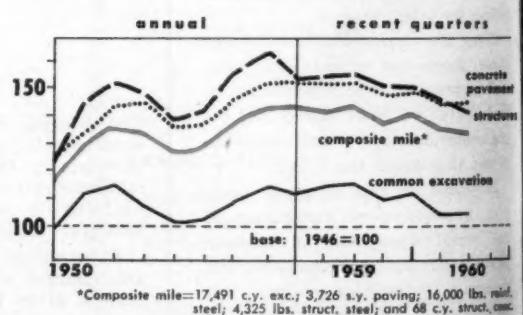
### DOLLAR VALUE OF NEW CONSTRUCTION Recent Monthly Trends



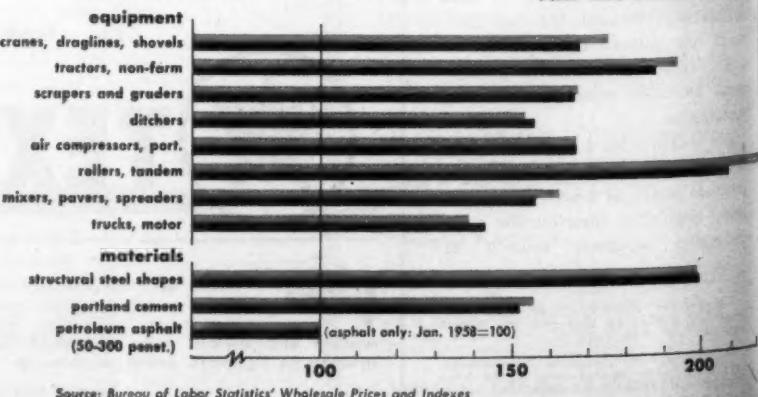
### 1960 annual rate



### AVERAGE BID PRICES Federal Aid Highway Construction



### PRICE INDEX 1947-1949 = 100



Health, Education and Welfare (which contains money for hospital and other construction); the military construction money bills; and others.

Of special significance—as an indicator of future trends, regardless of the outcome of the elections—is the fact that Congress approved (and the President okayed) a total of 26 "new starts" under the U. S. Corps of Engineers programs, as well as six others (all of which were budgeted) for the Bureau of Reclamation. Included in the "new starts" was work on many ports along the Great Lakes, to aid participation in growing shipping business generated by the St. Lawrence Seaway.

And despite the failure of the more grandiose housing plans, Congress did approve a stop-gap housing measure carrying more than \$600 million. It included a one-year extension of the Federal Housing Administration's home-improvement loan program; \$500 million of additional loan funds for college dormitory and other college housing work; and \$50 million in new loan money for community facilities programs.

There was also some \$211.5 million worth of construction money tucked into the general appropriations for the Atomic Energy Commission. This includes \$13 million for construction of a nuclear reactor to supply power in the Antarctic.

#### Highway investigations due in three more states

It is certain that the highway program will come up for another session in the spotlight of Rep. Blatnik's (D., Minn.) special subcommittee of the House Public Works Committee. The only question is just when the



new round starts. Betting at the moment is that nothing will happen until after the elections in November.

But the committee is having some pretty bloody internal battles of its own, with minority Republicans charging favoritism and cover-up, and Democrats indignantly denying this and accusing the minority of carping and cover-up in its turn.

The fighting has become public enough to be well known in Washington, and it is providing the press with a steady succession of "leaks" that pretty well chart the direction of the current investigations.

From these leaks, it is certain that the next states under the spotlight will be Florida, New Mexico, and Massachusetts. In all, the investigations will involve right-of-way irregularities, in some cases "excessive" use of consultants and poor construction work.

OCTOBER, 1960

But there'll be a difference, too: In these cases, according to Washington information, the committee's sleuths are following trails already uncovered by the Bureau of Public Roads. In Florida, BPR pressure has already resulted in dismissal of at least one official; in New Mexico, the bureau has withheld some payments pending correction of irregularities; in Massachusetts, BPR investigators have been checking into right-of-way costs for more than a year—in fact, the "leak" to Boston newspapers of a confidential BPR report to the committee caused the latest blowup.

Here again, make no mistake. The results of the committee's findings will affect legislation next year, when Congress is due to take a full-scale look at the highway program.

#### Materials requirements a clue to progress of road program

On highways, also, it should be noted that the BPR continues to note a slight downturn in construction bid prices, indicating the continuing steadiness of this field.

Materials suppliers should get a copy of a report on Highway Construction Materials Requirements, issued by the office of engineering of BPR. Tables accompanying the report give principal materials requirements, now estimated on a basis of four years' experience, for the road program.

Interesting points: in the 1954-56 period, 260 tons of structural steel went into each \$1 million worth of highway, but in 1957-59, the figure was 185 tons. The reason suggested

is increasing use of prestressed-concrete members in highway structures.

#### Photogrammetrists decide against submitting bids

If you have occasion to use the services of photogrammetrists in the future for aerial surveys or other purposes, you should note that these firms are "going professional" and will no longer submit bids for their work.

In making this move, the Association of Professional Photogrammetrists is following the lead of the American Society of Civil Engineers, and has agreed to accept ASCE's definition that their work is "logically a civil engineering activity of a highly specialized type, which should be negotiated" in selling the service.



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## Tricks of the Trade

### Hot sand means extra dollars to dredging company

Dredging, quarrying, and supplying local contractors with hot-mix are all regular operations for Waterloo Dredging Co., Waterloo, Iowa. A B-G 5,000-pound BatchOmatic asphalt plant takes care of the plant-mix work throughout the regular road construction season.

In the off season, the company makes profitable use of the plant's rotary-drum dryer to dry and heat sand for a number of users. Among them are plasterers, who find that heated sand reduces the need for space heaters in houses being plastered during the winter months; and pipeliners and ditching contractors, who spread a thick layer of hot sand along the trench line to thaw as much as 2 feet of ground overnight so that jackhammer work—common in winter excavation—can be eliminated.

The double-duty work of the Barber-Greene plant keeps it paying its way on the company's ledger books on a year-round basis.

### Finisher pulls roller



Rolling the feathered edge of a bituminous mat is no problem for Flenniken Asphalt Co., Dallas, Texas. The firm has a Pioneer Vibromatic finishing machine pull a 2-foot-wide heavily weighted roller to give initial compaction to the slanting surface.

The material is spread by a box extending from the screed. Chained to the spreader box is the handle of the small roller. Coco mats, hung from a cross bar on the roller, keep the steel free from clinging asphalt.

### LUBE LOGIC

Keeping equipment on the job 92% of the time is an achievement anywhere. But when you can do it while operating in sandstorm country, over 12% grades out of a 300' deep pit to an additional 200' to top of spoil area, 100 miles from the nearest parts

### What Maco is doing

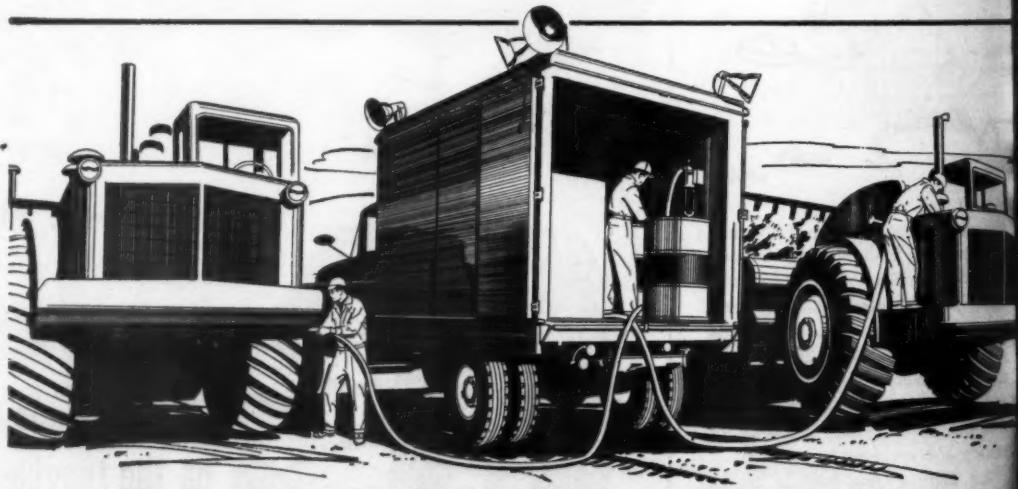
Maco Construction Co. is stripping the over-burden from uranium deposits recently located in the Gas Hills area of central Wyoming for Western Nuclear, Inc. This is the largest strip mining operation ever attempted in the state, and calls for the removal of 25,000,000 cubic yards of over-burden. In this large

source—and while you're at it remove a million cubic yards of earth every month, it's a record. Maco Construction Co. is doing it right now, and in doing it they've set up such a fine maintenance routine that we think it'll be a help to you to read about it.

### These four tips ch

open pit, the uranium ore lies from 250' to 300' below grade.

Maco is using twenty-two scrapers, six power tractors, two bulldozers, two motor patrols and one backhoe on the job. Texaco fuels and lubricants are used exclusively.



### Clean-sweep lube rig handles two machines at once

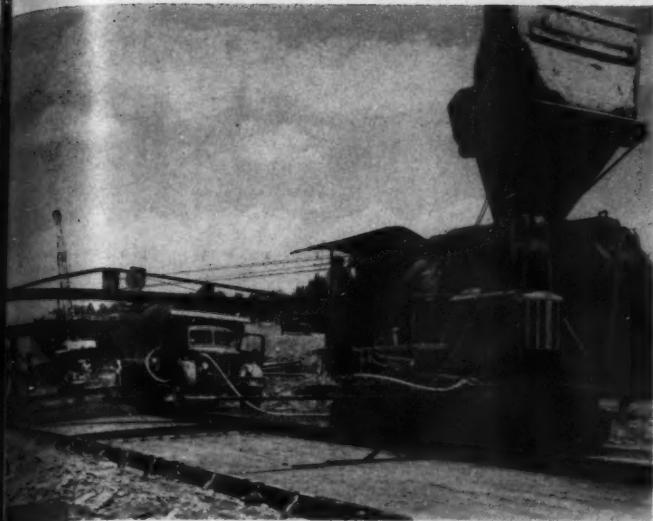
Maco personnel designed and developed a lube rig for this job that is just about as complete as they come—and it has the extra advantage of being able to service two pieces of equipment simultaneously, to make the most of the short period between shifts.

The rig is mounted on a 2 ton van that's kept warm in winter with waste heat from compressor and generator engines. It has two sets of hose reels, one on each side, so that two men can lubricate two different machines at the same time.

Since Maco has a Texaco Simplified Lube Plan, the

rig can accommodate sufficient lubricant inventory for the project. Air motors drive the lubricant pumps, and a separate electric air compressor furnishes air. A 25 KW diesel generator set mounted in the van provides power for air compressors, power pumps and the four big floodlights. Maco personnel built the tanks that hold motor oil and hydraulic fluid; transmission and job grease are pumped direct from original containers.

With this lube rig it's possible for the maintenance crew to lubricate all major equipment in the three hour period between shifts, so no work time is lost.



## Sprinkling device on concrete paver wets down subgrade

Automatic sprinkling of the subgrade during relocation of New York 17 between the Catskill Mountains and New York City is being handled by the lead paver.

The sprinkler is actually a perforated pipe, and water is pressure-fed from the paver supply to wet the subgrade as the paver moves forward. The device rigged up by supervisory

personnel of Merritt-Chapman & Scott Corp., New York, N. Y., spreads the water more evenly and accurately than a hand operator could, and it frees a man for other work.

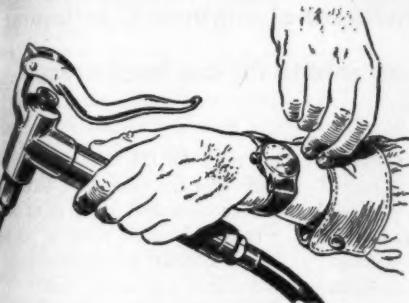
The device is attached at the leading edge of and at right angles to the Koehring 34-E that heads the train. Each time the rig moves forward, the operator opens the sprinkler valve and a fine 12-foot spray of water wets the entire subgrade just ahead of concrete placed for the first 6 1/2-inch course of concrete.

The sprinkler arm does double duty. The boom is fixed to the anchor point for the cables that tow the strike-off screed riding the form rails. After concrete has been deposited in front of the screed, the paver operator winds the tow cables on a drum; the cables pass through a block on the braced arm just behind, and fastened to, the sprinkler pipe. In this way, the operator controls the distance the strike-off screed travels.

This \$7,292,000 job covers an 8-mile stretch of the new 4-lane divided highway, six overpasses, and guard-rail installation.

The 9-inch-thick roadways are being reinforced with hinged welded-wire fabric. This, incidentally, is one of the first major applications of the hinged reinforcing in New York State. The principal advantages of the hinged sheets lie in shipping and

## tip achieved 92% average availability



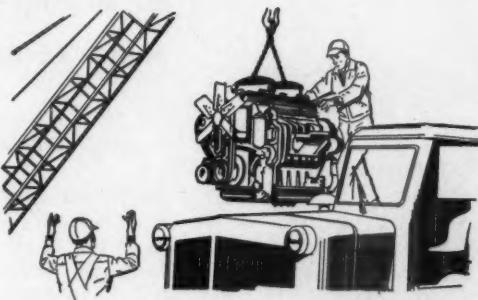
### Clockwork lube scheduling boosts availability

50' to 30' six p...  
ols and other machine on Maco's spread is serviced every day, in the period between the close of the day shift, at 4:30, and the beginning of the night shift, at 7:30. The 22 spares are lined up in a double row, and the mobile passes between them. Every machine is lubricated completely, and air filters are cleaned, at the end of every 10-hour shift. Crankcases are drained every 100 hours. Lube interval on gearboxes and torque converters is 2000 hours.

### Simplified Lubrication Plan protects 33 major units with only five products

TEXACO SIMPLIFIED LUBRICATION PLAN	
One Oil Heavy Duty:	engine crankcases
Universal Motor Oil 10W:	Euclid Torquomatic Drive
Universal Gear Lubricant EP:	all gear boxes and final drives
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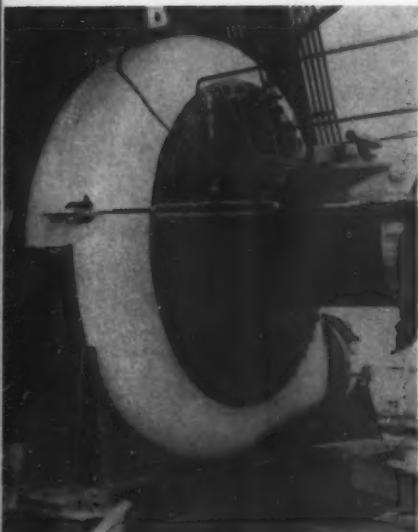
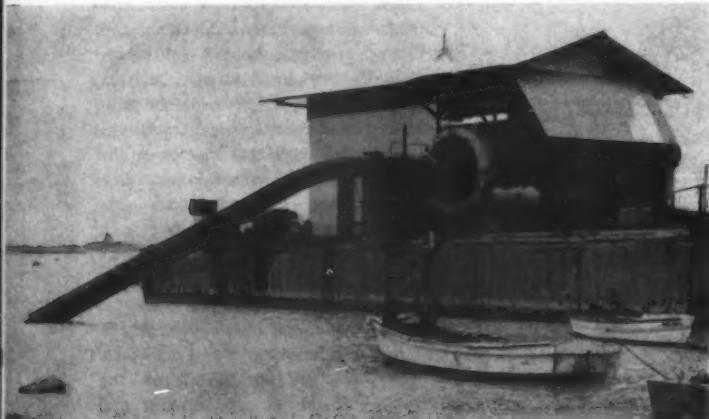
handling. The sheet folds almost in half, so that the width is reduced from nearly 12 to about 7 feet. This allows flat-bed trucks to make deliveries from stockpile to job site.

Because New York State specifies a heavier weight for the two end sheets in each 60-foot, 10-inch slab, the stock handlers place these heavier sheets where required; the lighter, hinged sheets are spaced between. In each slab, reinforcing consists of two 8-foot-long end sheets, with three 16-foot-long hinged sheets between. The hinged sheets are readily handled by two workers and are placed as soon as the first course of concrete has been struck off. Average production for the spread is 3,000 feet of 12-foot lane per 10-hour day; more than 4,400 linear feet of slab is being put down on "best" days.

The 24-inch electric-powered suction dredge E. C. Gray chews away at the hard coral bottom as it forms a second entrance channel to Honolulu Harbor, where increasing marine traffic has made the work essential. The bid by Hawaii Dredging & Construction Co. was \$259,650 for the 1.17-million-yard project. Most of this material, sold to a real estate developer, is being pumped 13,000 to 15,000 feet to a low area.



## Booster pump cut dredging cost



A big job is done by the powerful booster, some 4,000 to 5,000 feet from the dredge, which pushes the coral an extra 8,000 to 10,000 feet to the fill area. The booster pump is powered by a 6,000-hp electric motor that was once one of the main drive motors of the destroyer escort Wantuck. The motor turns the pump at 257 rpm to handle the coral.



The 75-foot 60-ton ladder is brought to the surface for an inspection of the 72-inch X 5-foot Esco peacock cutter. Wear on the cutter and 48 teeth by the tough coral was one of

**Bid on project is one-third of engineers' estimate; million yards of coral sold to fill low land area**

Contractors and Engineers staff article

Expressions of genuine shock greeted the opening of bids for the dredging of the second entrance channel to Honolulu Harbor. The Hawaiian Dredging & Construction Co., Ltd., Honolulu, had bid the job at less than a third of the engineers' estimate and less than half of the next highest bid. But the U. S. Army Corps of Engineers and the other bidders were more shocked than Hawaiian Dredging.

The tabulation of bids showed the Corps of Engineers' estimate for the job to be \$949,226. Western Contracting Corp. bid \$1,752,460. Pacific Dredging Co. came well under the estimate with a bid of \$548,600. The low bid by HD&C was \$259,650.

This was no mistake. Although the

bid price for the dredging was only 14.5 cents per cubic yard, HD&C had already arranged to sell most of the 1.17 million cubic yards of material to a real estate developer to build up a low area into useful land.

The only apparent problem was how to get the material to the fill site, which lies 13,000 to 15,000 feet from the dredging area. HD&C had the answer in a powerful booster they had built around a 6,000-hp electric motor salvaged from a scrapped Navy destroyer escort.

### Relieves harbor congestion

The dredging project is one phase of the development of a second entrance into Honolulu Harbor. With the expanding tempo of business and industry in Hawaii, the number of



the job's big problems. The entire cutter was rebuilt and re-welded at least once a week; teeth sometimes had to be replaced or built up three times a week.

ships enter is increasing single entr to handle The U. S. Honolulu, Clifton, is entrance to the west end of the project in the buoys br land access. The a separate was also Phillips which hol structure, structure superstru as a joint

Hawai 14-inch a make the powerful mate The E. fitted w powered that tur Commem a trans carried a large t main dr all oper The d carried suspend The lad 5-foot driven Elec em Ge The s en Stat 200-hp friction by han lar stea in diam respect from 5 is used in a chaser" cutter cutting the sw Beh 4,000 10, 75 with t ported builds main to the sea shore. The feet 1 and 1 painted line. It of the

OCTO

ships entering and leaving the harbor is increasing to the extent that the single entrance channel is insufficient to handle peak traffic.

The U. S. Army Engineer District, Honolulu, headed by Col. John R. Cline, is developing the Kaihi entrance to the Kapalama Basin at the west end of Sand Island. The dredging phase calls for the excavation of a channel 35 feet deep and 500 to 1,000 feet wide through the coral reef—some of it very hard coral.

In addition to the dredging, the project includes the construction of a causeway bridge to carry the Sand Island access road over the new channel. The bridge is being built under a separate contract—for which HD&C was also the low bidder—by Alton V. Phillips Construction Co., Seattle, which holds the contract for the substructure, Hawaiian Dredging & Construction Co., which will build the superstructure, and J. H. Pomery Co., a joint venture.

#### Dredge E. C. Gray

Hawaiian Dredging assigned the 24-inch suction dredge E. C. Gray to make the excavation, and set the powerful booster in the line to push the material to the fill.

The E. C. Gray has a 24-inch pump fitted with an 82-inch runner and powered by a 1,500-hp electric motor that turns the pump at 360 rpm. Commercial power is picked up from a transformer station on shore and carried by submarine cable to a cable barge that follows the dredge. The main drive, cutter, and swing motors all operate on 2,300 volts.

The dredge's 30-inch suction line is carried on a 75-foot 60-ton ladder suspended from a 50-foot A-frame. The ladder also carries the 72-inch x 5-foot Esco peacock cutter that is driven at 28.2 rpm by a 700-hp General Electric motor through a Western Gear Corp. gear reduction.

The swing and hoist gear, by Golden State Iron Works, is powered by a 200-hp Fairbanks, Morse motor. The friction drive controls are operated by hand levers. The reinforced tubular steel spuds are 30 and 33 inches in diameter and 78 and 75 feet long, respectively. The swing lines operate from 5-ton anchors. The port anchor is used to moor a small barge carrying a sheave to provide "double purchase" on the swing wire to pull the cutter through the hard coral on the cutting swing. The cutter is raised on the swing to starboard.

Behind the dredge is 1,300 to 4,000 feet of 24-inch floating line in 60, 75, and 135-foot sections fitted with ball-and-socket joints and supported on steel pontoons that HD&C builds in its own shops. The remainder of the 15,000-foot pipeline to the booster pump and the disposal area is laid in shallow water or on shore, with rigid joints.

The E. C. Gray has a steel hull 117 feet long, 37 feet wide, and 9 deep, and has a draft of 6 feet. She is painted Hawaiian Dredging's typical blue.

It had been anticipated that most of the material to be dredged would

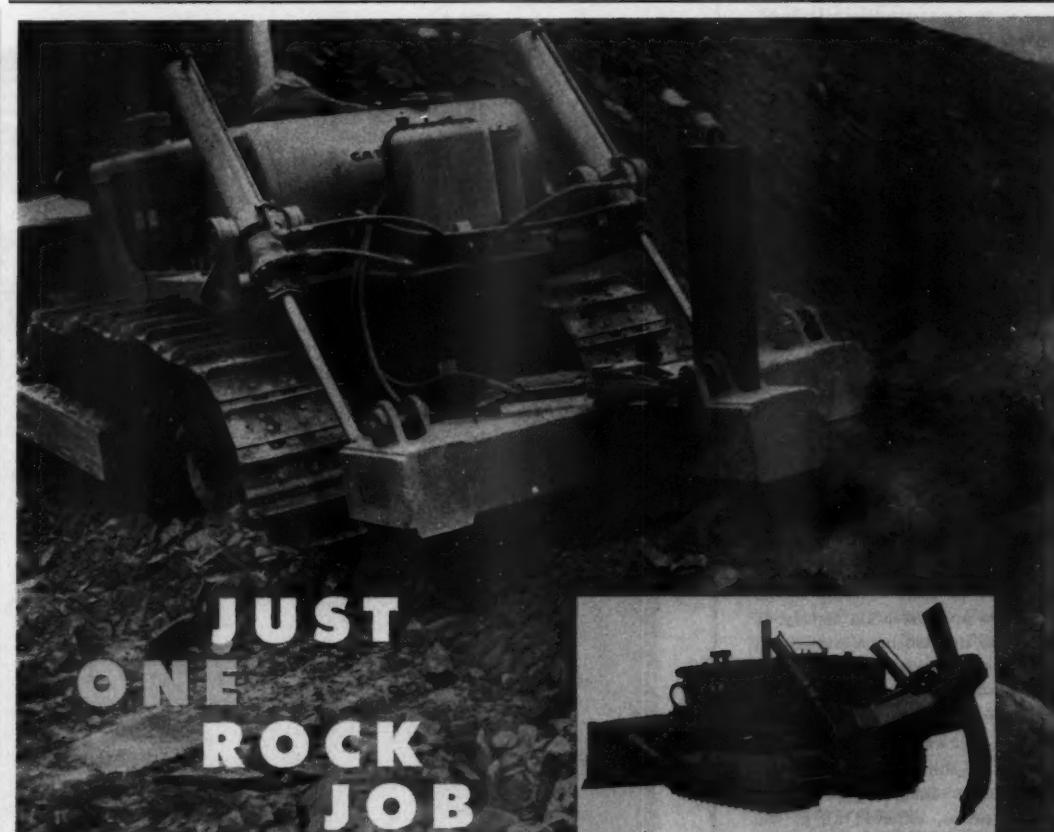
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The main pump of the E. C. Gray is fitted with an 82-inch runner. A 1,500-hp electric motor turns the pump at 360 rpm at full power.

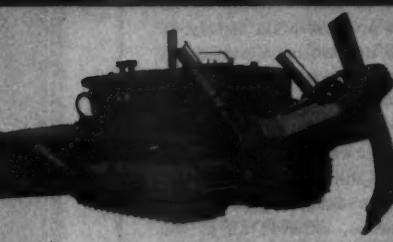


A 700-hp General Electric motor, left, drives the cutter shaft through a gear reducer. The cutter is driven at a rate of 28.2 rpm.



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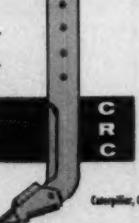
The Extra-heavy Duty Kelley Ripper makes full use of the power and traction of the Cat D9 Tractor to slice through rock at seven foot depths.

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Job Location	Material	Ripping Costs (Costs/Co. Yd.)	Drilling and Blasting Costs (Costs/Co. Yd.)	Savings (%)
Oklahoma	Limestone	7.3	17.3	58.4
Texas	Limestone	5.2	15.1	65.6
California	Sandstone	15.0	30.0	50.0
Kansas	Sandstone	2.1	11.7	82.1
Ohio	Sandstone	5.7	13.8	58.7
Pennsylvania	Limestone	11.5	19.3	40.6
Virginia	Sandstone	8.6	15.7	45.3
Minnesota	Frost	25.0	60.0	58.3
Minnesota	Paint Rock	6.1	54.5	88.8

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(Continued from preceding page)

be relatively soft coral, but some very hard and well cemented ledges were encountered. In the softer materials, the dredge excavated 14,000 to 15,000 cubic yards per three-shift day without difficulty, but production dropped below 3,000 yards when the cutter began digging into the harder coral.

The peacock cutter was fitted with 48 digging teeth, and the cutter blades were faced with welding of special hardfacing rod. Some teeth had to be replaced or built up every second or third day, and the entire cutter was rebuilt and rewelded at least once each week.

The hardest ledges had to be dynamited before they could be excavated. Some charges of the dynamite were simply dropped down onto the coral and "bulldoze" blasted. In other cases, it was necessary to drill ahead of the blasting.

#### Booster is powerful

The 6,000-hp electric motor of the booster has an interesting history. It was one of the two main propulsion motors of the Navy's destroyer escort Wantuck—APE-127—which saw service during World War II in the Far East. Her keel was broken in a collision, and the ship was sold for scrap.

Hawaiian Dredging bought the ship at scrap prices, removed all of the mechanical equipment, plumbing, electrical facilities, etc., and then sold the hull to a scrap dealer. The equipment was all shipped to Hawaii for possible use in the construction and repair of dredges.

When the contractor needed a powerful booster station to assist its 24-inch dredge, this big motor was put to use. It is connected to a 24-inch pump with an 82-inch runner. The assembly is mounted on the flat deck of a scow and covered with a light metal building. A transformer station on shore supplies the power, which is transmitted through a submarine cable to the barge.

On this setup, the booster is located 4,000 to 5,000 feet from the dredge and has to boost the material 8,000 to 10,000 feet to the discharge point. This is an effort even for this big motor, which turns the pump at 257 rpm to push the heavy coral on out to the end of the pipeline.

The coral was pumped to a low area of approximately 50 acres in a portion of a real estate development

This is the booster's control panel, which was also salvaged from the disabled destroyer escort. When the job is finished, some 50 acres of land will have been built up about 7 feet by the dredged coral.

known as the Damon Tract. The area was built up more than 7 feet to make it suitable for industrial or residential development.

To reach the tract, the pipeline followed along the shore and crossed the lagoon to a natural drainage channel leading inland. Following along the bank of this channel, the pipeline crossed under the bridges of two major highways and a railroad.

A Caterpillar D8 tractor-dozer on the fill kept the material graded and assisted in the moving of the pipes.

#### Personnel

Capt. Sol Kapuli is in charge of the E. C. Gray, providing general supervision of the entire job. Work was

started under the superintendence of Knox Borden, who has been transferred to another tough dredging project HD&C has started in Taiwan. The starting dredge captain, R. E. "Dick" Frankland, has been shifted to Nagoya, Japan, to push another HD&C Far Eastern dredging project. Ernest Souza, shore superintendent, has been taking care of the extensive pipeline system and looking after the coral as it spews from the end of the line.

The resident engineer for the Corps is Bob Arbaugh. Construction activities of the Honolulu District are under the supervision of the Pacific Ocean Division, headed by Brig. Gen. E. I. Davis, division engineer. The Re-



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## Labor Review

### Uphold operating engineers in raid by AFSCME in Minnesota dispute

David L. Cole, umpire of raiding disputes under the AFL-CIO No-Raiding Agreement, decided that the American Federation of State, County and Municipal Employees intended to disrupt a bargaining relationship established by the International Union of Operating Engineers by seeking Minnesota state certification as representative of maintenance employees in three of 20 Minnesota highway department maintenance districts. Cole's recommendation is that AFSCME promptly discontinue ef-

orts to upset IUOE's bargaining relationship in these districts and so inform the Minnesota State Labor Commissioner and the state highway department.

The umpire says that membership figures, verified in part by the highway department, show that the engineers have more members than AFSCME in the three districts in question, although the latter organization is definitely the dominant union in the other districts.

AFSCME contended in the proceeding before Cole that the operating engineers obtained representation rights in these three districts by suc-

cessfully raiding AFSCME in 1955-56, and argued that the doctrine of "clean hands" requires that the IUOE should not be permitted to profit now from such activities.

### New York City sheet-metal workers accept 81-cent package

New York City sheet-metal workers, on strike since July 1, returned to work August 29 under a new 3-year agreement that will increase hourly wages a total of 75 cents and add another 6 cents for existing fringe programs.

The sheet-metal workers walked out after rejecting a proposal approximating the 3-year, 70-cent pattern established by unions in the New York City Concrete Alliance. The

Sheet Metal Union's demand was a 1-year contract with a 49-cent wage boost.

Under the new agreement, an estimated 5,000 union members resumed work for a base hourly rate of \$4.65. A 10-cent raise is scheduled for January 1, 1961; another 10 cents is due July 1, 1961; 20 cents more will be added January 1, 1962; and a final 20 cents is payable July 1, 1962. The 3-year agreement remains in effect until July 1, 1963.

Fringe benefits are continued in the new contract. Employers pay 3 per cent plus 10 cents an hour for welfare, 3 per cent for pensions, and 2 per cent plus 10 cents an hour for vacations. Also carried over from the old agreement is the 7-hour workday, now standard in New York City except for some of the heavy crafts.

### Eastern Indiana carpenters take 27½-cent raise under 1-year agreement

Carpenters in three eastern Indiana counties returned to work under a 1-year agreement that will raise their wages 27½ cents an hour. The agreement follows an earlier pattern set by carpenters in northern sections of the state.

The new settlement covers LaPorte, Porter, and Starke counties, and back-dates the first 12½-cent hourly increase to July 1. Wages were raised another 5 cents an hour August 26, date of the settlement, and were due to go up 10 cents an hour more October 1, according to union attorney Bernard M. Marnet. Under the expired contract, carpenters earned \$3.62½ an hour, plus 7½ cents for health-welfare.

Other provisions of the settlement include a penny-an-hour contribution for apprenticeship training and an agency shop. Charges filed by both the contractors and the union with the National Labor Relations Board will be dropped as part of the agreement.

### Houston pipefitters strike over wages; want 17½-cent increase

Some 1,500 Houston pipefitters, represented by United Association Local 211, walked off the job in an effort to add 17½ cents an hour to their wage rates.

The previous agreement ran out July 1, but was extended through August 1, according to a union spokesman. The walkout got under way August 26.

The union is asking for 17½ cents an hour more in a 1-year agreement, or 17½ cents an hour each year, up to three years, the union official says. The old rate was \$3.80 an hour.

Contractors have offered 7½ cents an hour in a 1-year contract or 10 cents an hour more each year for two years, the union reports.

No fringe items are at issue. Tentative agreement already has been reached on referral and other non-wage items, the union says.

Local 211 also has agreed not to picket hospital projects, unless the hospital is new construction and unoccupied.

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# GOODYEAR

## Manufacturer Memos

The new vice president of manufacturing for Joy International, S. A., a wholly owned subsidiary of Joy Mfg. Co., Pittsburgh, Pa., is George R. Fox. He was formerly works manager of Joy plants in Franklin, Pa.

Fox will work on manufacturing matters with the firm's subsidiaries in Australia, France, Great Britain, and South Africa, and will handle

liaison between these operations and Joy's eight plants located in the U. S.

C. A. Patten has been appointed works manager of Joy's plant in New Philadelphia, Ohio. He will handle plant activities in the manufacture of Joy Axivane fans and conveyors. Jack Adams has been named to succeed Patten as manufacturing manager, Franklin plants.

New members of the board of directors of Massey-Ferguson Industrial Division are Harold A. Wallace, left, vice president of manufacturing, and John H. Shiner, vice president of marketing.



the company's board of directors.

Both men, who joined M-F in 1964, had concentrated to a large degree on the North American market. Their responsibilities became worldwide in scope with the creation of a global corporate management group last November.

Walter Eichelberger has been named sales engineer for Form-Crete all-steel casting forms by the West Machinery & Chemical Corp., Lakeland, Fla.

His territory will cover Georgia, Florida, South Carolina, and the Caribbean area. He has been with the FMC sales department for 12 years. Prior to his new position, he was with the Form-Crete department. He replaces James Frasier, who is working in another phase of FMC sales operations.

Charles B. Leber has been appointed advertising manager of Caterpillar Tractor Co., Peoria, Ill., succeeding Burt M. Powell, who has retired. Leber's previous post as manager of the sales division of the defense-products department is being filled by Frank S. Foster.

J. W. Arnold, president and general manager of the Parsons Co.



New president and general manager of the Parsons Co., Newton, Iowa, is J. W. Arnold. The trenching-machine company is a division of Koehring Co., Milwaukee, Wis.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has named Walter F. Strehlow senior consulting engineer for the firm's Tractor Group and Robert S. Reaves chief engineer of the Farm Equipment Division's tractor works at West Allis, Wis.

Strehlow, who has been chief engineer at the West Allis tractor works since 1939, has received 30 U. S. patents and 20 foreign patents covering inventions. Part of his new duties will include special assignments on engineering problems within the Tractor Group.

Reaves has been serving as assistant to the director of engineering for the same group.

The Koehring Division of Koehring Co., Milwaukee, Wis., has named Willis Fisher product manager for its line of concrete paving and paving-maintenance equipment. The line includes the giant Tribatch, as well as two other sizes of pavers, longitudinal and transverse finishers, and Mud-Jacks.

CONTRACTORS AND ENGINEERS

### WITH POWER SHIFT TRANSMISSION...

## "We proved the 977H Traxcavator doubles our production"



HAROLD PATE



Strunk Bros. of Tiskilwa, Ill., put its new Caterpillar 977H to the test.

"We put the Series H machine against the earlier 977 . . . had them side by side excavating and loading 10-yard trucks," Superintendent Harold Pate reports. "Both machines had expert operators. The 977H loaded out five trucks in the same time the older machine got 2 or 2½ trucks. We proved the new 977H Traxcavator doubles our production."

Operator Wilbur Crank, who loaded 11 to 12 cu. yd. of clay and loam in the trucks in 60 seconds with the new unit, explains why.

"It's easier to operate. It's got more power. It's faster and handles well in mud. But most important, it's got that power shift transmission. That's the biggest part of the faster cycles. I can shift down instantly—and I mean instantly—to the speed I need. A flick of the wrist and I'm in second for moving. Another flick and I'm in reverse."

The 977H is a machine with more of everything. Horsepower of its turbocharged engine is up 50%—to 150 HP at the flywheel. Hydraulic lifting power is up 41% because of Caterpillar's *live action* hydraulics.

That means faster lifting speed and greater lifting capacity without robbing power from the tracks.

Bucket capacity is up 11%—to 2½ cu. yd.—and there's a stronger linkage to handle the heavier loads. And there's a larger, stronger, lifetime lubricated undercarriage to stand up under the roughest conditions. It never needs servicing until rebuilding.

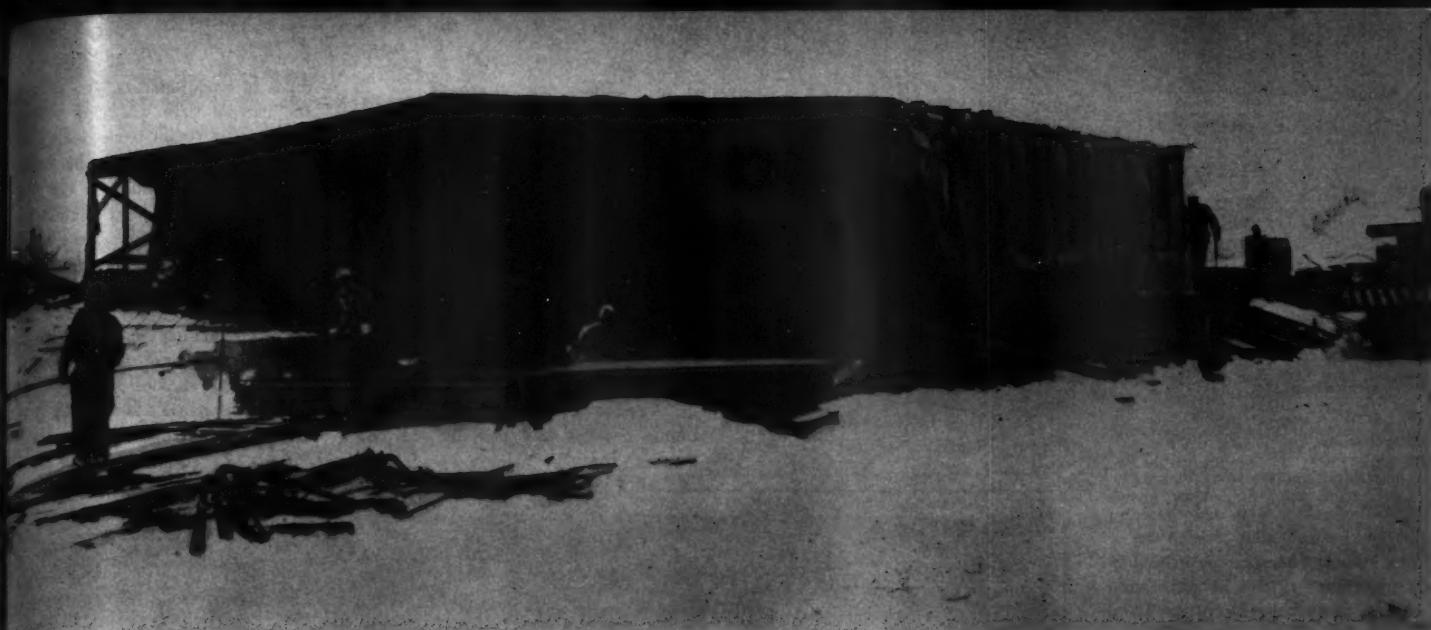
You may be missing a lot—in profits and production—if you aren't using one of the new Series H Traxcavators. See for yourself. Your Caterpillar Dealer will demonstrate one of the new machines side by side with the machine you are now using on your present job. And watch the difference!

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TRAXCAVATORS  
ARE MAKING OTHER  
LOADERS OBSOLETE



Three days before concrete is to be placed for the slab floor of the hospital at Kincheloe AFB near Kinross, Mich., a 42 x 48-foot shelter is moved over the forms so

that the area can be heated. The wood frame has canvas at the ends for convenient access. Tough waterproof Sisalkraft paper is used for the roof and sides.

Contractor on AFB hospital in Michigan uses

by BILL ALLEN, field editor

## Building methods that defy cold weather



Carpenters complete first-floor formwork. Wood trusses of 2 x 4's form the 42-foot span of the shelter, which is made of 4 x 12-foot sections.

Working a job through a winter in Michigan's Upper Peninsula is only for those who know how. Fair-weather contractors are apt to lose their insulated underwear.

When a blizzard hits a building project in this part of the country, shelters, forms, and anything else that isn't nailed down goes flying through the air and isn't seen until the following spring. After a snow storm, equipment is often buried in mountainous drifts.

In the Upper Peninsula, the weather is no less fierce than the competition. In order to get a job, a contractor must bid the work as though he were expecting the sun to shine every day through the winter. But the sunshine

### WINTER WORK

soon turns to snowflakes, and the contractor has to use every method in the book to cut rising costs.

Champion, Inc., Iron Mountain, Mich., a contractor that has worked through many winters in the Upper Peninsula, has supervisors that have learned how to run a job through these rugged months and still keep costs in line. They have developed their own cold-weather construction techniques.

#### Ground slab placed in winter

Practically all phases of building construction were handled by Champion in subfreezing temperatures during work on a hospital at Kincheloe (formerly Kinross) Air Force Base near Kinross, Mich., in the Upper Peninsula. This area is in the "snow belt" about 20 miles south of Sault Ste. Marie.

On this job, men placed concrete on ground that had previously been thawed by steam heat. They formed and placed the first-floor structural slab and the short supporting columns of the crawl space. In the enclosed and heated crawl space, plumbers and electricians were able to go ahead with their work. Ironworkers



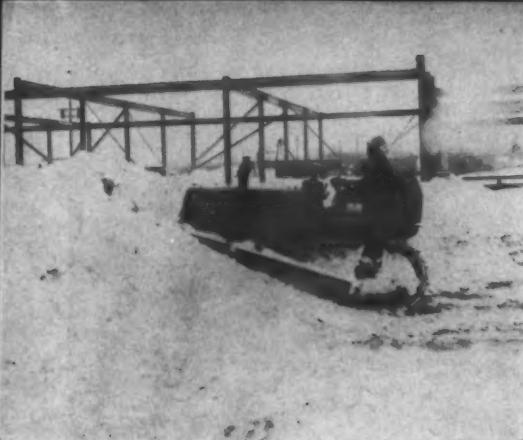
Ironworkers check plans for first-floor steel. Beam bottoms are supported by 4 x 4 shores with Ellis adjustable clamps. Richtube fiber forms are used for crawl-space columns. The snow was left by a storm before the shelter was erected.



This Heltzel 1-stop plant supplies the job with concrete. The Pettibone Speedall 175 loader uses its 1 1/4-yard bucket to load aggregate to a hopper feeding the bucket elevator. The aggregate stockpiles were heated by steam.



Using a flexible steam line, a workman melts snow and ice from a block-out for a steel column base on the first floor. Steam is piped into the building from the base power plant.



Right after a 2-foot snowfall, a Cat D4 tractor-digger digs in to clear the area near the hospital site.

put up the steel that framed the 1-story hospital. Masons laid the block and brick of the exterior walls while working in heated enclosures.

The 50-bed hospital, expected to be completed next year, will serve the needs of the men stationed at the base and their families. Built at a contract price of \$1.7 million, the hospital contains a 209 x 148-foot medical wing and a 192 x 78-foot nurses' wing. The all-purpose hospital is equipped to handle anything from maternity cases to injured Air Force pilots.

The concrete floor of the building is supported by the 8-foot-high circular columns of the crawl space. Resting on the first-floor slab is the 1-story I-beam and bar-joist frame of the building.

#### New SAC base

The building of the base hospital is actually a small part of the overall construction program at this new SAC base. Since the start of the expansion program in April, 1958, \$21 million in construction contracts has been awarded. The work has included airfield paving, ammunition storage units, dormitories, control tower, and many other facilities. Champion came out low bidder on four of these contracts totaling about \$5 million. All of the construction is supervised by the Detroit District office of the U. S. Army Corps of Engineers. It is expected that the base will be operational this year.



Working in the heated crawl space, a sheet-metal worker solders a ventilation duct with a Bernz-O-Matic propane torch. The propane is carried in the small replaceable container.

#### Steam defrosts ground

In building the hospital, the contractor found it necessary to place a 42 x 61-foot slab on the frozen ground. To get the 3 feet of frost out of the sandy soil, a network of 1-inch pipes, spaced about 2 feet apart, was laid on the ground and connected to the steam line that served the building from the base power plant. Live steam was allowed to escape from the continuous network of pipe through a valve at the end of the line.

A canvas cover was placed over the pipe network and held off the hot

pipes by wood spacers. The edges of the canvas were weighted down to prevent the steam from escaping.

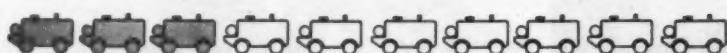
The combination of the steam-heated air space and the hot pipe unfroze the upper layer of sand, and the warm water filtered down, warming the lower levels. It took about three days to thaw out the 3 feet of frost.

Champion has used the method successfully several times in the past, but Bill Cowell, vice president of the firm, cautions that the method is not likely to be effective in clay soils.



New Blue Brute drilling team—Worthington Blue Brute 900' rotary compressor with over/under design operates two Blue Brute crawler-mounted 4 1/2" drills.

## Why your next 900' compressor wins



Most manufacturers build their small rotary compressors with end-to-end design. Only 3 out of 10 produced use over/under construction (shown in blue)...



Yet in the 900' size, more over/under units are sold than any other. The story opposite tells why...

If you looked inside every rotary compressor on the market you would one major difference that separates men from the boys.

A few manufacturers build rotaries with over/under design: the compressor's second stage is direct underneath the first. This results in improved rotary with many benefits (such as 4 1/2" cylinder diameter, self-draining stops clogging) and easy to get repairs. All principal parts can be

In going up with the crawl-space columns and first floor, it was also necessary to get the frost out of the ground. Frost-free ground was needed to support the falsework for the floor slab. Steam pipes covered with canvas were used to thaw out about a foot of the frost. If this had not been done, the mud sills supporting the falsework would have settled when the area was later enclosed and heated.

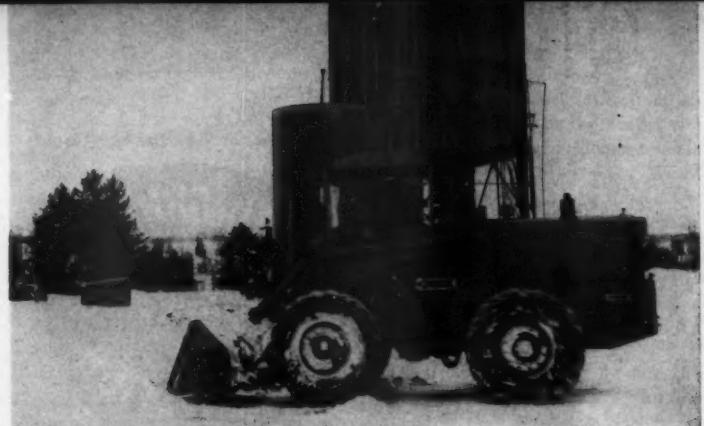
After the frost had been taken out of the ground, men set the mud sills, 4 x 4 falsework, and pans for the

slab. Up to this point, all the work was done in the open.

#### Shelter protects concrete

About three days before slab concrete was placed, a special shelter was moved over the work area. The house-like shelter was built with a clear span of 42 feet in 12-foot-wide sections. Four sections set side by side covered a 42 x 48-foot area. The shelter was built in separate sections so that it could be easily moved.

The frame was built of 2 x 4 studs with 2 x 4 trusses spanning the 42



The Speedall used to feed aggregates to the plant conveyor doubles as a snow shovel when snow has to be cleared from the plant area.



New Blue Brute 4 1/2" crawler drills available now — see your Worthington distributor for details.

feet. The frame received Sisalkraft curing paper, which proved to be both tough and waterproof, for the roof and some of the wall areas. Some wall panels were covered with transparent plastic to admit light. Access to the shelter was gained through canvas draped over the frame ends.

With the shelter over the formwork, men set the reinforcing steel, electrical conduits, and other piping. While this work was going on, the area below was closed off by tarps.

Column concrete was placed about a day ahead of that for the floor slab. According to the superintendent, this made the columns easier to plumb. It also meant that the column concrete did not have to be placed through the obstructing beam steel. An additional advantage: the completed columns made a good anchor for the deck forms. During concrete work on the columns, the crawl-space area was warmed by heaters fed from the steam connection into the building.

#### Insulate concrete

Heated concrete for the floor slab was bucketed from a transit-mix truck to a hand buggy just outside the shelter, and the buggy was wheeled through a gap in the canvas to the forms. Inside the shelter, two Herman Nelson oil-fired heaters warmed and dried the air to speed curing.

After the concrete was finished and had set up sufficiently, it was covered with sheets of 3/4-inch fiberboard. Canvas was placed on top of the fiberboard to form an insulating

(Continued on page 19)

## For wind likely have OVER/UNDER design

you would  
at separate  
ers build  
er design:  
is direct  
this results in  
many bea  
draining  
easy to get  
arts can be  
ved for inspection and replaced in  
The superiority of over/under design  
indicated by the fact that in the  
most expensive size (the 900'  
more over/under rotaries are bought  
any other kind. Yes, it takes  
under design to handle heavy  
such as operating two Worthing-  
4 1/2" Blue Brute drills which get  
maximum drilling footage with least  
consumption and less maintenance.

Worthington is one of the few manufacturers that offer over/under design in every compressor in its line. Worthington Blue Brute rotaries made with over/under design are built in 125', 210', 315', 365', 600' and 900' sizes. (A single-stage 85' rotary is also available.) There's a complete line of Blue Brute drills, too—right through the 4 1/2" size. Ask your nearby Blue Brute distributor for a demonstration. You'll find him in the Yellow Pages under

"compressors." Or write Worthington Corporation, Dept. 60-24, Holyoke, Mass. In Canada: Worthington (Canada) Ltd., Brantford, Ontario.



For more facts, use Request Card at page 18 and circle No. 258

OCTOBER, 1960



In the tarp-enclosed area below the freshly placed concrete is one of the Fedders heaters that warm the area. Adjustable 4 x 4 shores with Ellis clamps support the 4 x 4 formwork for the steel pans used in forming this section of the floor.



## "Lubrication IN THE FIELD

with the *Lincoln Lubrovan*\* helps us  
meet our production schedules"

says **William P. Fulghum**  
vice president  
**Fulghum Contracting Corporation**  
**Harrisburg, Pa.**

"In our type of business," says Mr. Fulghum, "delays are costly, both to our profits and our reputation. We can't afford to have our equipment tied up too long for lubrication and servicing.

"By bringing lubrication right to the job site with our custom-designed Lincoln Lubrovan, we can operate with a minimum of downtime. Production schedules are easier to meet, and our equipment works better and lasts longer, because it's properly lubricated at all times."



**Lincoln Lubrovans and Lubmobiles  
lubricate equipment IN THE FIELD —  
reduce downtime —  
increase equipment life**

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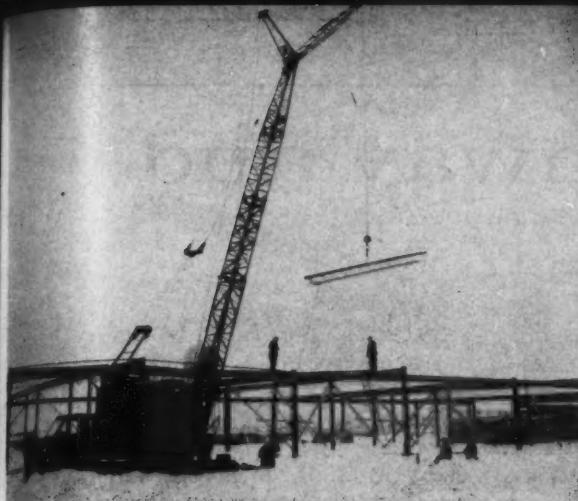


STANDARD OR CUSTOM-DESIGNED PORTABLE LUBRICATION PACKAGES contain all the needed equipment—air compressor, lubricant pumps, reel-and-hose assemblies, etc.—to keep your 'dozers, scrapers, and other machinery operating at maximum schedules, with as little downtime as necessary.

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**LINCOLN ENGINEERING COMPANY**  
Division of The McNeil Machine & Engineering Co.  
4010 GOODFELLOW AVENUE • ST. LOUIS 20, MISSOURI

For more facts, use Request Card at page 18 and circle No. 259



A Link-Belt motor crane helps to set bar joists that will span the 20 feet between bays. Bolted I-beams form all the spans going in one direction; steel bar joists make practically all spans going in the other direction.

(Continued from page 17)

blanket. The only heat to the concrete was supplied from below by the heaters in the crawl space. The day after concrete placement, the shelter was usually moved to another location. The enclosed area under the concrete was kept heated for at least four days. The concrete gained strength rapidly for it contained high-early cement.

#### Plumbers work in comfort

As the work was completed on the floor slab, plumbers and electricians moved into the crawl space to keep their work on schedule. The area in the crawl space was heated by about nine Fedders blower-type heaters, with coils heated by steam piped into the building from the base power plant.

While plumbers worked in comfort in the crawl space, ironworkers got out in the cold to set the steel framework. Bolted connections tied the beams in one direction while welded connections tied the bar joists in the other direction.

With the steel deck of the roof in place, work began on the block and brick exterior walls. Canvas, draped from the steel members of the roof, formed a tentlike enclosure over the wall area. Oil-fired heaters warmed the enclosure while masons laid up the brick to just below the roof level. In warmer weather, the brick was



Bill Cowell, left, vice president of Champion, and Henry Brosio, superintendent, talk over plans.

OCTOBER, 1960

built up above the roof to form a parapet wall.

#### Batch plant equipped for winter

Concrete for the building was furnished from the contractor's batch plant. The Heltzel 1-stop plant was stoked with aggregate by a bucket conveyor. The hopper feeding the conveyor was kept filled by a Pettibone Speedall 175 front-end loader.

Steam, furnished by a Vapor-Clarkson boiler, heated the two stockpiles. The steam percolated up through the sand and gravel from a network of perforated pipes.

At the batch plant, heated water and high-early cement were added to the aggregate. The batches were received by transit-mix trucks.

If the contractor sets up the plant

again for winter operation, he will install a drain pipe leading from the pit at the bottom of the bucket elevator. When the plant did not operate for several days, the pit collected water that froze and kept the buckets from turning. A steam hose had to be used to melt the ice. With a drain leading water away from the pit, this difficulty would be eliminated.

#### Personnel

The district engineer for the Detroit District of the Corps of Engineers is Col. Woodrow W. Wilson. The resident engineer at Kincheloe is Frank R. Crevier. For Champion, Inc., the job superintendent is Henry Brosio. Bill Cowell, the company's vice president, keeps in close contact with the project.

THE END

## REDUCE COST AND DOWNTIME... WITH



RENEWABLE SPROCKET RIMS



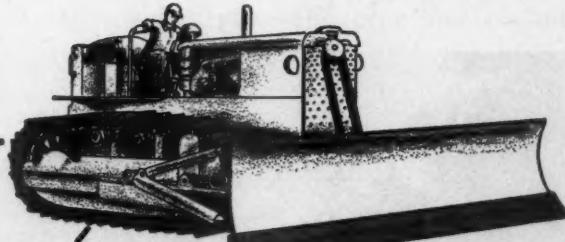
TRACTOR PADS



END BITS



DOZER BLADES



# TISCO<sup>®</sup> TRACTOR REPAIR PARTS

Made of tough Manganese Steel which "improves with age" becoming harder from impact and the stress and strain of machine operation, Tisco Sprocket Rims, Tractor Pads, End Bits and Dozer Blades are designed to give longer service life and greater economy of operation -- **WRITE TODAY FOR BULLETIN 1-59** which describes how worn sprockets can be readily reclaimed; how it has been possible for special design features to be incorporated into Tisco Tractor Pads and how Tisco End Bits and Dozer Blades resist abuse and abrasion.



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# Short cuts for highway and street contractors

Contractors faced with keener competition and higher costs are looking for ways to ease the profit squeeze, and public officials, too, are concerned with stretching their tax dollars. They are searching harder than ever for better methods, and for equipment that will do more kinds of work—that can move fast from one spot to another so that its versatility can be fully utilized. This is why "PAYLOADER" tractor-shovels are so valuable, from start to finish, on highway and street construction.

A single investment gives you a multi-purpose machine that can clear right-of-way, dig and load, backfill, feed concrete and asphalt batching plants, push and tow, handle forms and other equipment. In addition, because it has rubber tires, it prevents damage to existing paved surfaces, curbs, shoulders and right-of-way.

Mobility is a big "PAYLOADER" plus because it can travel to wherever you need it on the contract at 25-30 m.p.h. The fact that a "PAYLOADER" and only a "PAYLOADER" is available with a Drott 4-in-1 Bucket, a Wain-Roy Backhoe and a Superior Side Boom—any one or two, or all three at the same time—adds wider versatility to their unusual mobility. Additional attachments, such as Vibratory Soil Compactor, Black-top Spreader and Hydraulic Earth Auger provide extra "PAYLOADER" usefulness at modest cost.

If you are looking for a way to ease the profit squeeze, we suggest that you talk "PAYLOADER" with your Hough Distributor. He has a wide choice of sizes to meet your needs, plus the most complete parts-service facilities in the rubber-tired tractor-shovel industry to keep your "PAYLOADER" profitable.



**Land Clearing.** "PAYLOADER" with Drott "4-in-1" Bucket roots out brush, boulders, stumps and logs—loads or piles them at a profit-making pace.



**Excavating.** Sure-footed traction with power-transfer differentials, and powerful tip-back bucket action, combine for efficient digging from bank, pit or pile.



**Compacting.** Self-contained, self-powered attachment has Jackson electric vibratory units—spans 10-ft. and quickly interchanges with "PAYLOADER" bucket.



**Black-Topping.** Ram spreader attachment is self-contained, self-powered—lays hot or cold mix up to 6-in. deep, up to 8 feet wide—has 2 cu. yd. hopper.

For more facts, use coupon on facing page or circle No. 261



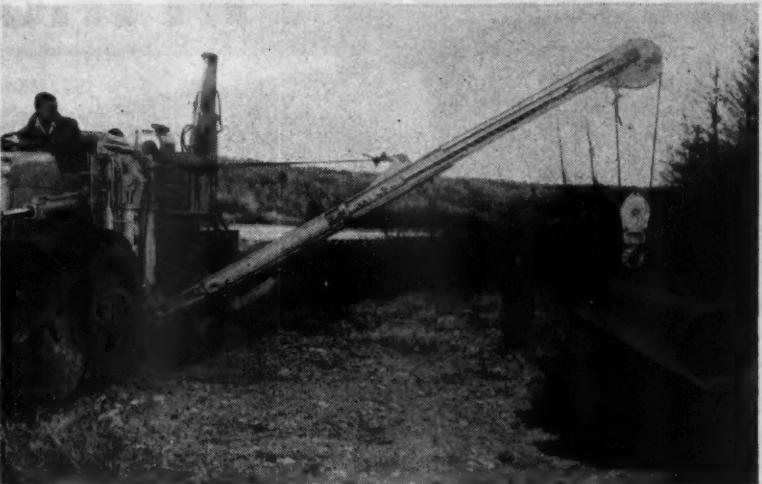
**Lifting and Carrying.** A chain or cable sling on the bucket or a crane hook attachment makes a "PAYLOADER" a reliable mobile crane.



**Feeding Aggregate.** Big model H-120 feeding asphalt plant. There's a "PAYLOADER" size to feed any size of bituminous or ready-mix plant.

**Pushing and Towing.** A "PAYLOADER" can pinch-hit on push-loading, free stalled trucks, pull compactors, move compressors and pumps, skid timbers and logs.

**Installing Drains.** "PAYLOADER" with Wain-Roy backhoe and Superior side-boom is a triple-threat performer — can dig the trench, place the pipe and backfill.



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**Removing Pavement.** Reliable traction plus powerful pry-out bucket action enables "PAYLOADER" to root out sections of old pavement.

For more facts, use coupon or Request Card at page 18 and circle No. 261



Old reliables are Snogos, one on an FWD truck. Rigs work from both sides of a slide. Operators have an audience in the winter-sports enthusiasts who have to wait until the road is cleared.

## WINTER WORK



Another rotary, the Snow Hawg, has a blower at the end of a one-way plow. Generally, the rig, distributed by Rudy Yost, Portland, Ore., is preceded by two or more graders plowing in tandem.



A once-a-year job—the clearing of Chinook Pass is started by a D7 and D8. This second-highest pass, with a summit at 5,440 feet, is impractical to maintain through the winter.



Power shovels get into the act. This one works on one of the high passes. Shovels are also used where snow cannot be cast off the road but must be hauled away by trucks.



As an experiment, this grapping device was used to remove debris that comes down with a slide. It was found more practical to use tractor-dozers or power shovels for the work.

# Snow fighting in mountain passes

## Well maintained rigs clear passes in the Cascades; radio, teletype aid clearing crews and public in winter

Contractors and Engineers staff article

Maintaining the highways over the Cascade Mountains in Washington through the winter months is a constant fight of men and equipment against the heavy snows. Although the passes are not nearly as high as those in the Rocky Mountains or the Sierra Nevadas, they lie in a belt of heavy snowfall where frequent storms keep maintenance crews busy.

Some 250 well coordinated small crews, each with two or three pieces of equipment, patrol 5 to 30-mile sections of the state highway system. Each of these crews works under the immediate supervision of a lead man, who is really a working foreman, or a foreman who supervises two or three section crews. Each crew is responsible for the maintenance of its control section. They go to work when it starts to snow, change shifts as necessary, and continue working until the road is clear.

Special crews with more and heavier equipment handle the critical passes and the special problems in these areas. These crews use tractor-dozers, rotary plows, motor graders, and even power shovels.

Of the seven principal passes on the state highway system, six are kept open throughout the winter. Because of avalanche danger, no attempt is made to keep Chinook Pass open. When the storms let up in the spring, and the danger of snow slides or avalanches is past, crews start the big job of clearing away the winter's accumulation of packed snow and ice.

### Radio and teletype help

A comprehensive system of fixed and mobile radio units has proved a tremendous advantage to the highway department in maintaining contact with the many crews and in keeping areas clear. The radio system and teletype circuits also aid in keeping the traveling public informed of the exact road conditions—and in keeping many travelers out of trouble zones during hazardous periods.

The department's radio system includes 335 mobile units in the cars, pickups, and trucks of maintenance and supervisory personnel, plus 50 base and



Equipment maintenance during warm months gets the snow-fighting fleet in top condition. Crews in the Yakima district shop are fitting this GMC truck with a push plow, above, and a sander, center. The sander



box is raised to send sand flowing to the small gate in the center of the tail gate. The chute leads it to a spinner. A front-mounted snowplow and a rear sander that has been remodeled so many times it is practically



shop-built are carried by the Diamond T above. Latest modifications are hydraulic motors, fitted onto both feed belt and rear spinner. This rig spreads a wide pattern to cover two full lanes.



Dozers are almost lost as they work their way through the winter's accumulation of snow at Chinook Pass. The dozers leave the last 3 or 4 feet for rotary plows to clear. Equipment goes to work opening this pass as soon as it can be spared.



The Snow Hawg is one of the favorite rigs with highway-department crews. The blade feeds snow to a powerful fan at the right of the plow. The white stuff is blown clear of the road.

Chinook Pass  
-highest pass  
-critical to traffic

repeater stations. The unmanned repeater stations on the mountains use two frequencies to receive and transmit messages across mountains beyond the reach of the short-wave units.

A closed-circuit teletype system, sponsored by the Washington AAA, connects the highway department with the Weather Bureau, Civil Defense, and the radio, television, and newspaper services of Seattle, Tacoma, and Olympia for the exchange of weather and road information. The highway information disseminated through this system cuts down on phone calls.

During the snow season, four regular daily reports go out over the closed-circuit teletype each day. At 6:30 a.m., the department reports conditions on the four major passes. At 9:30, there is a complete report, including the Mt. Baker winter sports area, the six passes, and any other pertinent reports. At 11:30 a.m., a brief report tells the conditions on Stevens and Snoqualmie passes, the two heaviest-traveled routes. A complete report is given again at 4:30 in the afternoon. Emergency news is flashed over the system at any time.

In addition to the closed-circuit system, the Washington highway department has an open-circuit teletype so that reports can be exchanged with neighboring states and with the news services as to road, weather, or other emergency conditions.

#### Maintaining the passes

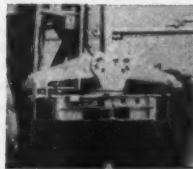
Snoqualmie Pass on U. S. 10 (Interstate 90) is the heaviest traveled of the mountain routes. Most of it has been improved to Interstate standards in the past few years, and this has eliminated some problems. Here, the motor graders are the workhorses. They hit the road when a snowfall starts and stay with it until the road is clear again.

For plowing snow, blunt cutting edges are used on the motor-grader moldboards. When ice or hard-packed snow is to be removed, serrated blades are used. These blades groove the ice and help to hold sand and salt. Most of the department's motor graders are the 100-hp Galion and Huber-

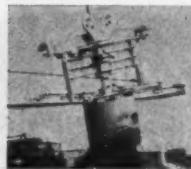
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## New crawler mounted Calweld Drills offer more... More features... More digging power... More speed!

### Check the features...



Hydraulic down pressure (50,000 lbs.) for faster digging in hard substrata.



Hydraulic dumping arm for faster, safer dumping.



Hydraulic operated outriggers (box type).



50-ton capacity for pulling casings using hoist and crawler hydraulic rams.



Triple telescoping kelly bar for drilling to 90 foot depth.



Special bucket drills: rock grab, coring bucket, tungsten carbide rock drill and others.

**In a class by themselves**—Calweld Drills are BIG and do a big job—drill any size hole from 10 inches to 10 feet in diameter and 200 feet deep.

**It's the contractor's drilling rig**—because a Calweld does so many jobs—digs caisson pier holes, digs belled footings, pre-bores concrete piles, drills dry wells. Excellent for subsoil sampling and exploration.

*Write for 16-page illustrated Methods Manual for job facts and figures.*



## CALWELD DRILLS

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Los Angeles 22, California

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A Snogo cuts through remaining snow after dozers have cleared the biggest drifts. In addition to keeping the major passes clear, crews keep roads open to the ski areas.

(Continued from preceding page)

Warco models. Two new Adams and Huber-Warco 190-hp machines have proved very effective.

Stevens Pass on U. S. 2 is more difficult to maintain and is subject to avalanches. Big rotary plows are often required to work with tractor-dozers, and even power shovels are called in to assist on avalanche removal.

Although the Snogo has been the favorite rotary for many years, the department recently made good use of another type of rotary, the Snow Hawg. This machine, distributed by Rudy Yost, Portland, Ore., has a powerful blower at the right end of the large, one-way blade. This rig works especially well for widening.

For quick removal of the snow across the entire width of the roadway, three motor graders operate in tandem, each carrying the snow farther to the right. Then the Snow Hawg or Snogo rotaries throw the windrow completely off the highway.

In the Stevens Pass area, highway men work with the Forest Service to try to determine when snow and weather conditions make a slide condition imminent. At these times, men on skis place charges of dynamite in the overhangs. The dynamite is shot by cap and fuse when the workmen retire on skis to a safe distance.

Traffic on the road below is held up as the shot is made. If the slide comes down, a crew immediately starts removal of the material blocking the roadway. This often includes logs, trees, stones, and other debris that cannot be handled by the rotary plows. This is where the dozers and even power shovels move in to open the roadway.

#### Opening Chinook Pass

The opening of Chinook Pass, which is not maintained during the winter, is a spectacular annual event. This is the second highest of the passes, located in a high snowfall area, with its summit at 5,440 feet. The narrow winding road and the danger of avalanches make all-winter maintenance dangerous and impractical.

In March, when crews can be spared from the other passes, tractor-dozers start pushing their way through the Chinook Pass road from both ends. The dozers work right on

the snow pack, pushing it off to the downhill side. The dozers do not try to get down to the pavement but leave the cleanup for the Snogo that follow.

The two crews work toward each other until they meet. Depending on the depth of the snow pack and weather conditions during the removal period, the opening date may fall as early as May 1, or it may come in June.

Chain control on the pass road is maintained in cooperation with the



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clam-action 4-in-1's  
upgrade your  
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"equipment spread"

**GRADE** Use "carry-type scraper" action to grade with inch-close, labor-saving accuracy. Watch the earth boil into this 1½-cu. yd. Four-in-One as the operator does precise finish-grading.

**GRAB** Only the clam-action 4-in-1 lets you sit, grab, lift, and load "impossibles" like stumps, concrete, and rubble of all kinds. This action helps make the 4-in-1 a big money-maker for land and site clearing—cuts your equipment investment.

exclusive shock-swallowing Hydro-Spring performance protection. See what it means to upgrade your income with a 4-in-1, far above what an old-style single-action loader, or any other limited-duty rig can earn you. Let your International Drott Distributor demonstrate!



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**BACK-DRAG** Pull down materials wholesale (and safely) from the sand or gravel bank. And grade hard-to-get-at slopes with easily-controlled 4-in-1 back-drag action—which you get by simply moving a lever!

**SCARIFY** Use the scarifier attachment to loosen stony or compacted soils for easy loading or blading. The third valve of the standard International Drott hydraulic system provides the control power for the scarifier.



it off to the state police. When conditions warrant, the pass foremen on each pass set up signs reading: "Chains required on all vehicles—35-mile speed." Enforcement is handled by the state police patrols.

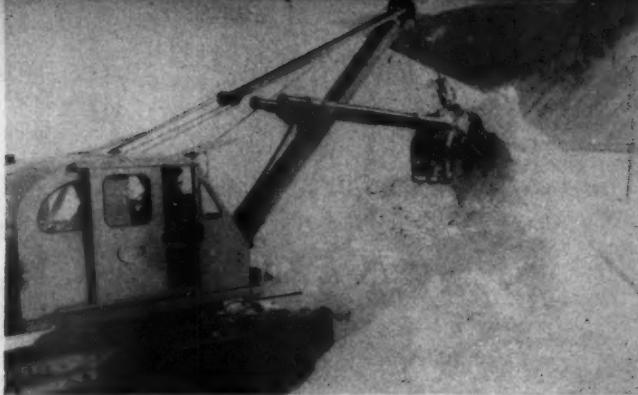
Two snowsheds aid in maintaining the road over Snoqualmie Pass. One of these is about a quarter of a mile long, and the other is 900 feet. Only two lanes of the 4-lane highway go through the snowsheds. When the conditions are dangerous or when slides have closed the exposed lanes,

2-way traffic is maintained through the snowsheds.

#### Rent equipment

To augment its own maintenance equipment, the Washington department rents additional machines for the winter operations. These trucks, motor graders, tractor-dozers, and tractor shovels are rented on bids. Contracts are also awarded for the stockpiling of sand at key points along the highways.

Additional manpower is also re-



When other equipment runs into too much difficulty, power shovels are called in. This Michigan TMDT-16 truck shovel is working in a deep drift in the vicinity of White Pass, the most southerly of Washington's passes over the Cascades.



the clam-action, grab, lift, and "s" like stumpable of all kinds, make the 4-in-1 work for land and your equipment.

**STRIP** Set the 4-in-1's clam in "empty-type scraper" position—sod or topsoil with efficiency to match specialized, single-purpose stripping equipment. And get jobs other rigs can't do.



**BOTTOM-DUMP** End the sticky materials problems, for good! Opening the clam of this 2 1/4-cu. yd. TD-15 Four-in-One pulls material from bucket surfaces—gravity down-pull does the rest—to assure positive, self-cleanout bottom-dumping.



**PICK-UP** Employ easily-controlled clam action to fill the 4-in-1 with elusive loose materials, in one fast gulp—and without "chasing" them. Watch this 1 1/4 cu. yd. TD-6 Four-in-One! You eliminate need for hand-shovel clean-up labor!



**SHOVEL WORK** Apply famous 4-in-1 pry-over-shoe break-out power and get power-shovel-like excavating force. This 3-cu. yd. TD-20 digs up concrete slab, tons at a time with up to 43,150 lbs. of break-out force—please a boom-type rig here!



## read" utility!

performance  
our income  
single-action  
you. Let  
rate!

scraper  
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scraper.

**SHOVEL WORK** Apply famous 4-in-1 pry-over-shoe break-out power and get power-shovel-like excavating force. This 3-cu. yd. TD-20 digs up concrete slab, tons at a time with up to 43,150 lbs. of break-out force—please a boom-type rig here!

**BULLDOZE** Open the 4-in-1's clam and you've got a full-capacity, earth-rolling dozer—depth-regulated by positive radius control. This action can "double" for a specialized dozer "most anywhere! And it's instantly available at a touch of the "job-selector" lever!

quired during the winter. In many areas, men are hired on a daily basis as they are needed. In the pass areas, the extra men work on a monthly basis—usually for five months.

#### Equipment maintenance

Snow-removal and ice-control equipment is as much emergency equipment as fire engines and must be ready to work when it is needed. Breakdowns must be minimized, since down time during emergencies may be critical.

To minimize down time, the Washington highway department gives all winter emergency equipment a thorough check and any necessary overhaul during the summer months. Most of this work is done in the shops of the Seattle and Yakima districts, where crews are busy all summer on this equipment maintenance.

In addition to engine overhauls and thorough checks of all parts of the equipment, many modifications are made in the shops. Experience from year to year indicates how machines can be made more efficient or more useful, and how winter breakdowns can be eliminated. The ideas gained from these experiences show up as shop-built modifications during the summer overhaul.

#### Supervision

The many crews under their working foremen do all work under the supervision of maintenance superintendents in each of the 23 highway divisions that make up the six districts of the state. Each district has a district maintenance engineer responsible to the district engineer. Washington uses the decentralized system, with each district engineer completely responsible for the maintenance and construction of highways in his district.

All of the maintenance operations for the entire state are headed by maintenance engineer J. L. Stackhouse. The director of highways is W. A. Bugge.

THE END

#### Maintenance crews save people trapped in slide

Quick action by maintenance men and others at the site averted tragedy when a huge slide engulfed four cars and three occupants unable to run for safety, shortly after this year's annual opening of Chinook Pass.

The section of road had been closed

For more facts, use Request Card at page 18 and circle No. 263

DRAINAGE SYSTEMS for summer homes are being built in winter snow with the help of Minneapolis-Moline backhoe-loader combinations. Perry Engineering Co., Inc., is doing the work at Lake St. Clair, north of Winchester, Va.



(Continued from preceding page)

since mid-November because of the danger of winter slides, but this year the crews got through a bit earlier than usual and opened the road to traffic on Friday, May 27. Later that same day, the road was closed for a while as crews removed a snow slough that hinted there was still some instability in the snow pack.

The following day, while crews were again removing some of the sloughed snow, four eastbound cars carrying a total of 21 people pulled up, waiting for the road to be opened. Without warning, a large avalanche came tearing down the mountainside, burying the four cars and three people in them—a man and two girls.

The slide pushed the cars out toward the edge of the road where there was a steep drop, but the snow boiled in under the vehicles like a huge wave, raising them up off the pavement and covering them completely. None of them went over the edge.

Working with all possible speed, the maintenance men and others dug the three out in about 20 minutes. None was seriously injured.

It was another story with the cars. The snow packed in so tightly around them that they had to be completely uncovered before they could be pulled out. The highway-department Snogs and plows worked through on the inside of the cut, clearing away as much snow as possible; the remainder had to be shoveled away by hand.

When the cars were recovered, one was a complete wreck and the others were damaged. It was late Sunday before the last of the cars was removed, and the road was not reopened to traffic until Monday.

#### Diamond Portland Cement merged into Flintkote

The proposed merger of the Diamond Portland Cement Co., Middle Branch, Ohio, into the Flintkote Co., New York, N. Y., has been approved by Flintkote's stockholders. This action also paved the way for Flintkote's acquisition of The M. J. Grove Lime Co. of Frederick County, Md.

Now in the midst of a planned program of expansion and diversification, Flintkote has 109 plants and mills in the United States, Canada, England, and France. It produces a broad line of building products, in addition to lime and cement.

#### Case history

#### Heaters keep work moving at Niagara Power Project

On the Niagara Power Project, being built at a cost of \$720 million, portable heaters were used extensively last winter to keep work schedules moving. When completed, the project will supply some 2 million kw of electric power—enough to serve the domestic power needs of a city the size of Chicago.

Herman Nelson portable air heaters were used for preheating work areas in frozen terrain, for curing the

## ALL OVER THE U. S. A., CONTRACTORS

# power-steer and power-shift wi

### NO ATTACHMENT! NO AFTER-THOUGHT! NO "STOP-GAP"

Exclusive, years'-proven combined Planet Power-steering and Hi-Lo power-shifting are designed-in, built-in, basic standard equipment of the new 230-hp International TD-25!

Simplified TD-25 design is the only planetary system engineered and located to give you the dual advantages of "live track" steering and on-the-go shifting!

"Live track" Planet Power-steering eliminates load-limiting "dead-track drag"—gives power to pull full loads on turns, as well as on straight-aways. On-the-go, Hi-Lo power-shifting does away with time-wasting "gear-shift lag"—lets you match power to load instantly for full-speed cycles!

No wonder the new TD-25 can outearn king-sized clutch-steered crawlers up to 50%—on push-loading; land-clearing; overburden removal; benching; "mass-

production" dozing; ripping; other tough jobs!

New TD-25 seven-roller tracks are strength matched to the full effort of the new 230-hp diesel engine. The "25" is platformed on super-rugged double-box beam frames—and is smoothly carried on International dual-protected Dura-Rollers, the track rollers to make 1,000-hr lube intervals practical!

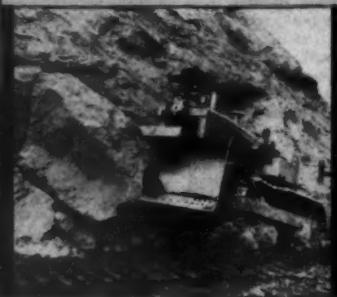
**Power-shift and power-steer the "25" with king-sized loads—around curves, upgrade, anywhere. Compare the advantages of getting this exclusive performance, and getting it from years'-proven standard equipment. Prove what's behind the "25" now. Rise to nationwide contractor acceptance. Let your International Construction Equipment Distributor demonstrate!**



Though "out-rated" 105-hp by a king-sized, clutch-steered competitor, this nimble TD-25 proves able to outwork "the big ones"—side-casting and benching to build Pacific Northwest mountain logging roads!



Three new International TD-25's of contractor V. E. Posey's fleet team up to prepare homesites from a mountainside—near San Diego, California. Dual-valving of the "25's" direct-start DT-817 engine provides for peak turbocharging efficiency—to deliver full-rated performance, from sea level to timberline!



Cleaning the face of a Missouri strip mine behind a big dragline, this TD-25 pushes "tractor-sized" boulders aside with the greatest of ease. This "25" also builds dragline walkways and haul roads—and drastically cuts land-clearing costs for Peabody Coal Co.



## International Construction Equipment

International Harvester Co., 180 North Michigan Avenue, Chicago, Illinois 60601. A COMPLETE POWER PACKAGES: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Gas Turbined Engines... Motor Trucks... Farm Tractors and Equipment.



For cycle-speeding push-loading, TD-25 power-shifting helps give "feather-touch" control; maintains solid push-block contact on curves; gives gear-hitch kick-outs that ordinary. The two "25's" tandem pushing the International 295 Payloader®, and the third one ripping, belong to superhighway contractor Bentley, Sylacauga, Alabama.

large concrete sections, and for providing efficient working temperatures for the crews.

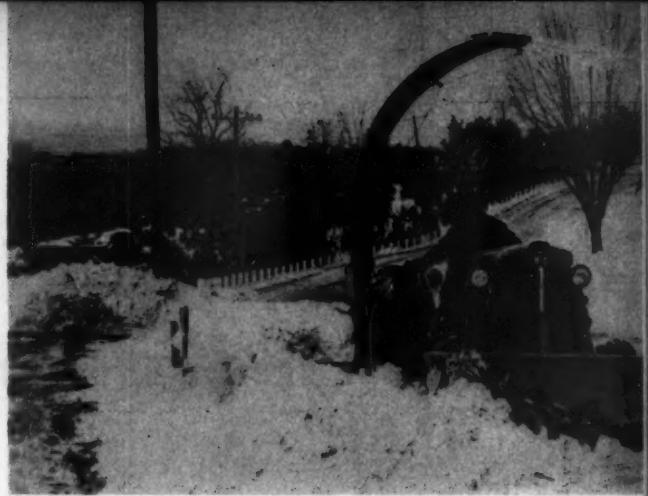
Many sites actually were inaccessible for a portable heater, and the use of flexible canvas ducts to direct the heat proved of major benefit. The portable heat was directed up high concrete walls, down into pits, and around tight corners—sometimes a distance of thirty feet from the heater itself. This advantage, plus delivery of fume-free, smoke-free heated air, was said to be an important factor in the use of the indirect-fired Herman Nelson units.

The heaters are owned by the Mer-

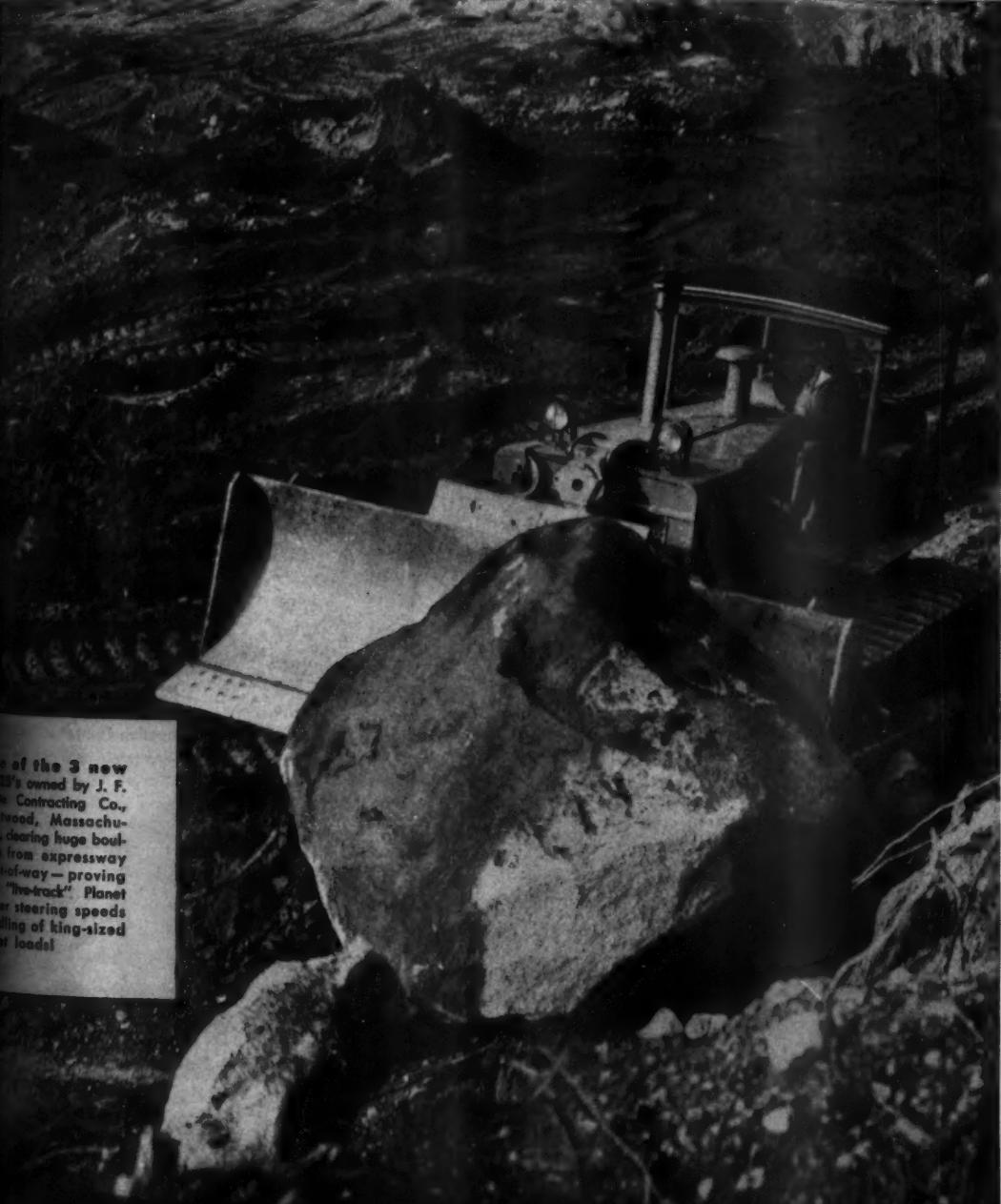
ritt-Chapman & Scott Corp., New York, N. Y.

For further information write to the American Air Filter Co., Dept. C&E, 217 Central Ave., Louisville, Ky., or use the Request Card at page 18. Circle No. 105.

THE CHURNING KNIVES of this harvesting machine chew up the snow and blow it through the discharge spout during a road opening near Stone Ridge, N. Y. The Crop-Chopper 33, made by New Holland Machine Co., New Holland, Pa., is being towed behind a tractor-plow.



## Shift with TD-25 standard equipment!



One of the 3 new TD-25's owned by J. F. Hall Contracting Co., Waltham, Massachusetts, clearing huge boulders from expressway right-of-way—proving "live-track". Planet steer steering speeds handling of king-sized flat loads!

TD-25 power  
drive; monolithic  
steel track; gear-hitch  
drive; tandem path  
and the other  
contractor

### Case history

#### Rotary drill is solution in winter pile driving

Construction of a marshaling yard in Moncton, New Brunswick, Canada, in an area where soft and muddy soil would not support large buildings without the use of bearing piles, was done in winter by the Canadian National Railways so that the pile driver could walk on the ground without the use of flotation mats.

In order to penetrate the  $4\frac{1}{2}$  to 6 feet of frost that was encountered at the site, crews placed steel shoes on the piles—but the piles broke when driven. An attempt to melt the frost with heat failed to improve the situation. Then large compressor and hand-held rock drills were brought in to make "starter" holes for the piles. This failed because as soon as any pressure was put on the drills, the mud thawed and plugged the air holes in the bits. A similar attempt with a wagon drill failed for the same reason.

Due to its fast drilling speed and ability to propel itself over difficult terrain, the Schramm Pneumatractor Rotadrill was recommended for the work. Using drag bits, this machine was able to drill  $4\frac{1}{2}$ -inch holes at a rate of 50 to 60 feet per hour. These holes were then charged with dynamite and exploded. After this preparation, states the company, the piles were easily driven and the problem solved.

For further information write to Schramm, Inc., Dept. C&E, 900 E. Virginia Ave., West Chester, Pa., or use the Request Card at page 18. Circle No. 90.

#### Pennsylvania readies anti-icing materials

The Pennsylvania Department of Highways has issued requisitions for \$4,968,590 worth of abrasives to fight ice and snow this winter. More than \$3 million is being spent for anti-skid materials such as sand, cinders, and crushed stone.

The rest is being used for 21,255 tons of calcium chloride, 60,221 tons of sodium chloride, and 27,650 pounds of anticaking compound.

◀ For more facts, use Request Card at page 18 and circle No. 264

## Foundation piles frozen in the ground

Buildings at an Air Force refueling base 175 miles south of the Arctic Circle are supported on timber piles frozen into place.

Except for the top 5 or 6 feet, the ground at the Baffin Island base remains frozen throughout the year. This is permafrost, and the freeze line extends down more than 1,000 feet. The top 5 or 6 feet thaws during the brief two-month summer and becomes a quagmire too unstable to support any building foundations.

### Pile foundations

This foundation problem was solved by working with and not against the permafrost. The Canadian Division of Merritt-Chapman & Scott Corp., C. A. Pitts, the general contractor, solved the drilling problem by the use of special equipment for the work.

Construction techniques at the base, which is being built by the U. S. Air Force through Canadian government agencies, were merely an adaptation of centuries-old methods calling for the freezing of construction materials.

Basically, the technique was simple. First, 18-inch-diameter holes were drilled about 22 feet into the permafrost by augers. The power augers had to be altered slightly, with drill bits on the bottom, to handle any boulders in the permafrost. If a rock stratum was hit as the hole was being sunk, drilling was stopped, rock-drilling equipment was put on the auger, and the hole drilled through the boulder. The augers themselves were faced with a high-strength steel alloy to combat the abrasive qualities of the frozen ground.

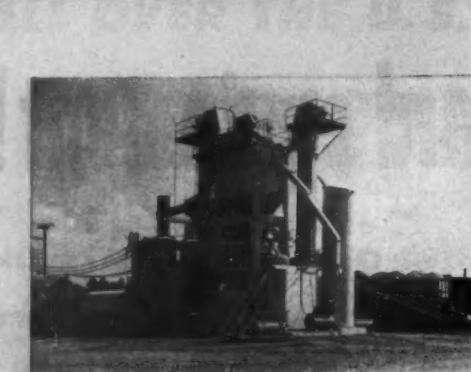
Once a hole was bored to a depth of 22 feet, creosoted timber piles, 10 x 10 inches in cross section and about 26 feet long, were simply lowered into the hole. Wet sand was then packed tightly around the piles and saturated with water. When this mixture froze, it formed a permanent concretelike casing around the piles and provided a solid year-round foundation.

### Freezing temperatures

Working through most of one winter in temperatures ranging from 10 to 62 degrees below zero, M-C&S crews placed over 1,600 piles in the permafrost. This phase of the contract had to be done in cold weather because during a thaw, subsurface water accumulating at the bottom of the active layer and over the permafrost would drain into the holes. This



Creosoted 10 x 10-inch piles, used to support buildings at the Air Force refueling base on Baffin Island, are set in holes drilled 22 feet into permafrost. After being set by a crane, the piles, about 26 feet long, are packed tightly with wet sand, which freezes to provide a firm foundation.



T-40 Batch Type Asphalt Plant



T-50 A Batch Type Asphalt Plant



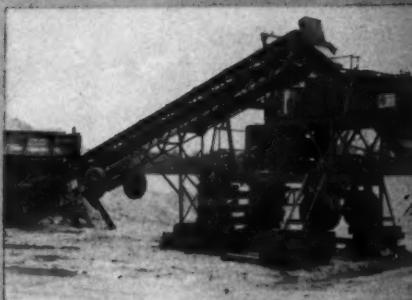
T-25 Batch Type Asphalt Plant



T-50 A Batch Type Asphalt Plant



S-250 Base Stabilization Plant



S-250 Base Stabilization Plant



S-250 Base Stabilization Plant



T-40 A Batch Type Asphalt Plant

... set by a  
freezes to

power auger drills 18-inch holes about 2 feet into the permafrost for the piles. Jack-drilling equipment was put on the auger to drill through boulders.



Three-foot-thick caps are formed over clusters of piles. The 4-inch space between cap and ground is formed by a sand lift, covered with polyethylene film. The air space keeps the buildings from thawing the ground.



The elevated buildings are insulated on the bottom to cut down on heat passage. Piles, driven in clusters of three and four, have triangular and square caps, respectively. All drilling was done in winter; in summer the ground is a quagmire.

# In Kentucky they bought **H & B PLANTS** *'by the dozen'* **in '59**

Kentucky has long been noted for many things. Kentucky Colonels, fast horses, bourbon liquor, beautiful girls, to name only a few. And, from present indications, the Bluegrass State will one day be equally notable for its splendid system of bituminous concrete roads. During the past year (1959) for example, the twelve units here pictured were furnished by Hetherington & Bemer Inc. for installation in Kentucky.

H & B is represented in Kentucky by the Rudd Construction Equipment Co. of Louisville.

You will notice this display includes several Base stabilization plants and Type T's and T-A's—the sturdy, proved, stationary and semi-portable batch plants that we established such outstanding production records. Available now in this general type are the new Series T plants, which have been still further improved in many respects, with batch capacities from 2,000 to 8,000 lbs.

And, of course, the popular new completely wheel-mounted mobile plants in three sizes (M-20, M-40 and M-60) with batch capacities from 40-70 to 160-225 ph.; and Moto-Paver, the combination traveling mixer-trailer which does the entire mixing and paving job in one continuous operation.

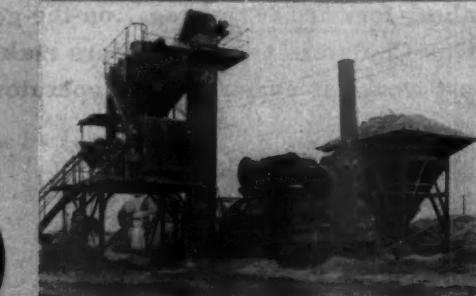
Your H & B distributor will be glad to give you complete information on any of these plants. See him soon, or call or write us direct.

**ETHERINGTON & BERNER INC.**

701 Kentucky Ave., Indianapolis 7, Ind.  
Rupert Day'l., 205 W. Wacker Drive, Chicago 6, Ill.

Cable Address: "PANMAKINA".

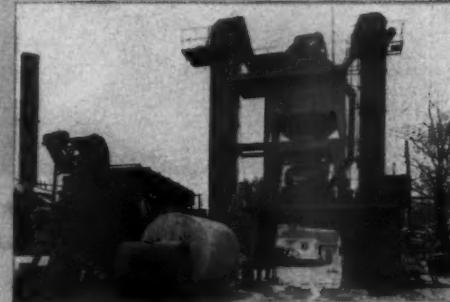
(A wholly-owned subsidiary of American Hoist & Derrick Co.)



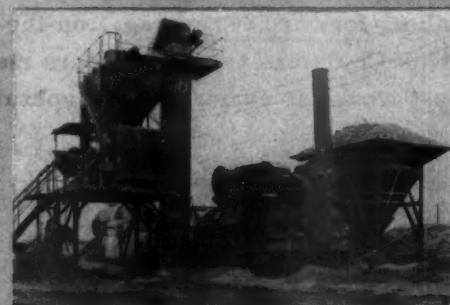
CH-20 Medium Capacity Batch Mix Plant



T-50 Batch Type Asphalt Plant



T-40 Batch Type Asphalt Plant



CH-20 Medium Capacity Batch Mix Plant

would make it impossible to sink them with auger-type drills without casing the top 6 feet of every hole, and this would have seriously delayed the project.

According to spex, the piles had to have a minimum 40-ton bearing, but M-C&S tested each to 80 tons. The testing was handled by placing a jack between an Athey wagon, loaded to 80 tons by reinforcing steel, and a steel plate over the top of the piles. This operation was done after the sand jackets had frozen, which required about 3 days.

Piles were driven in clusters of three and four, and were capped with 3-foot-thick triangular and square caps, respectively.

As soon as weather permitted, the pile caps were formed for concreting. Each cap is located 4 inches off the ground so that air can circulate underneath and prevent premature thawing of the ground by heat transmitted from the building. As an added precaution, a 4-inch insulation on the underside of the raised buildings reduces any heat passage.

The pile caps were formed by first erecting the timber side forms directly on the ground, around the pile clusters. Then the inside of the cap forms was backfilled with 4 inches of sand leaving the timber piles protruding 6 inches.

The 4-inch sand lift was covered with a polyethylene film that acted as the bottom form of the pile cap. After the cap had cured, the side forms were stripped and the 4-inch sand lift was removed.

Supply problems are king-size at Baffin Island. Materials must be brought in by ship during the two months of open water in the Arctic summer. It is mid-August before the season's first ship, preceded by an ice breaker, can make port in Frobisher Bay. By the time the last ship leaves in mid-October, a year's supply of building materials, equipment, and living necessities must be delivered. The job site is inaccessible except by air the rest of the year.

The supply operation is complicated by the 20-foot tide in Frobisher Bay. Ships must anchor 2 miles offshore and transfer their cargoes to smaller boats and lighters for delivery to the beach.

THE END

## Names in the News



F. J. Larkin, general superintendent of plant for Dravo Corp.'s Contracting Division.

### Dravo division names

The Contracting Division of Dravo Corp., Pittsburgh, Pa., has made F. J. Larkin general superintendent of plant. He is now responsible for supervising equipment used by the division in major construction projects.

### Bechtel named winner of engineering award

The John Fritts Medal, awarded annually for notable scientific or industrial achievement in the engineering profession, will be presented to Stephen D. Bechtel at the October meeting of the American Society of Civil Engineers. ASCE is one of the sponsors.

Bechtel, president of Bechtel Corp., San Francisco, is honored as "a pioneer in the creation and development of the modern construction industry." He has also been active in public service on the national level.



Norman W. Eastwood, vice president for the Construction Department of Merritt-Chapman & Scott Corp.

### M-C&S chooses veep

The board of directors of Merritt-Chapman & Scott Corp., New York, N. Y., has elected Norman W. Eastwood as a vice president for the Construction Department.

Eastwood has been with the department since 1945, most recently as construction manager. His promotion is one of the steps the company is taking to strengthen coordination of its construction operations.

### Farkas & Barron news

Jerome Felcher has joined Farkas & Barron, New York, N. Y., as an associate and project engineer. The consulting firm provides civil, highway, bridge, and structural engineering services.

### Crow names sales manager

The William L. Crow Construction Co., New York, N. Y., has established the new post of sales manager. Charles W. Knapp, Jr., formerly a district sales manager for a division of U. S. Steel, has been appointed to fill it.

Knapp will study the selectivity of contracts, in a high-volume market, with emphasis on the negotiable type.

### Ebasco division changes

New director of business development for the Management Consulting Division of Ebasco Services, Inc., New York, N. Y., is William F. Rooney. He moves to the New York office from Portland, Ore., where he was manager of the Northwestern regional office.

Charles W. Niederauer has taken

over Rooney's post in Portland. The office serves Oregon, Washington, Idaho, Utah, Montana, Wyoming, Alaska, and western Canada.

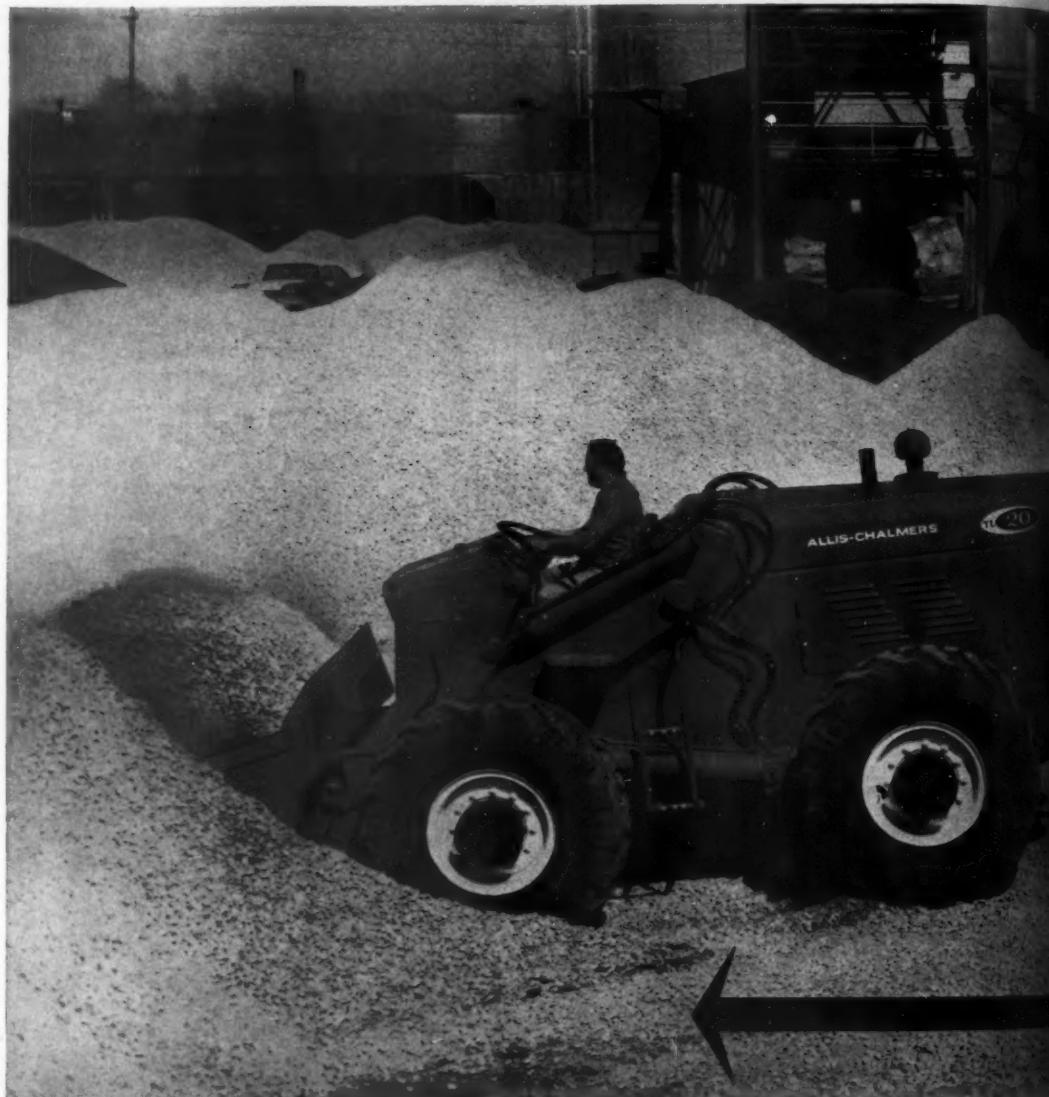
### Meissner creates post

The engineering and construction management firm of Meissner Engineers, Inc., Chicago, Ill., has created the new position of assistant to the president to increase coordination of staff activities. Jack McDonough was appointed to the post.

### Corps appointments

Col. Stanley G. Reiff has become a divisional engineer of the Army Engineers' Southwestern Division in Dallas, Texas, and will serve in the post until November. At that time, Brig. Gen. Robert J. Fleming returns from his present assignment as Commanding General, Theater Army Support Command, Europe, and will succeed Col. Reiff.

Col. John E. Carroll has become executive officer in Dallas.



## ONLY LOADER WITH...

You shift from any one gear to any other—forward or reverse...on-the-go. Allis-Chalmers tractor loaders make fast work far easier for any operator.

It's simple for a tractor loader operator to go faster—get more done. It's just as easy for him to go into a high gear as into a low gear—forward or reverse. ONE LEVER controls both speed and direction. No fumbling around with two or more levers or a combination of levers and foot pedals.

Besides operating simplicity, a tractor loader has firmly connected axles—attached to frame with 2-inch diameter steel pins...no rolling and shifting under load. Extra stability lets operators get and deliver

move ahead with

## D. B. Steinman dies

Dr. David B. Steinman died recently at the age of 73. During his career, he designed more than 400 bridges, including the Mackinac Straits Bridge in Michigan, the longest suspension bridge in the world, and the Henry Hudson Bridge in New York.

In 1923, Dr. Steinman founded a consulting engineering firm which this year became a partnership—Steinman, Boynton, Fronquist & Lon-

don. He was also the founder and first president of the National Society of Professional Engineers.

## ASCE nominates president

Glenn W. Holcomb, chairman of the Department of Civil Engineering at Oregon State College, has been named official nominee for president of the American Society of Civil Engineers for 1960-1961. He has served both as a director and vice president of the society, of which he became an asso-

ciate member in 1928.

Election will be by mail ballot of the ASCE's more than 45,000 members, and the new president will take office at the convention this month in Boston. He will replace the current chief, Frank A. Marston.

## NCA elects to committee

Gordon M. Jones has been elected a member of the executive committee of the National Constructors Association, Washington, D. C. He is as-

Gordon M. Jones, new member of the executive committee of the National Constructors Association.



sistant vice president and director of construction of The M. W. Kellogg Co., New York, N. Y.

The association is a group of engineering and construction firms.



## WITH... SINGLE-LEVER SHIFT

bigger loads with greater comfort. Add extra reach for fast, even dumping and you can see why production is higher with an Allis-Chalmers tractor loader. Let your dealer show you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

The "Big Three" tractor loaders range in size from the TL-14 with 5,300-lb carry capacity to the TL-20 (shown) with 9,000-lb carry. Each has a family of buckets—18 bucket loader combinations in all.



**ALLIS-CHALMERS**   
... power for a growing world

For more facts, use Request Card at page 18 and circle No. 266

# Plastic film enclosure

At right, 10-foot strips of Visqueen run the full length of the projecting balconies of the men's dormitory at the University of Nevada, Reno, allowing work to be done both inside and on the exterior. Nailing strips of 2 X 4's hold the film. Some vertical battens prevent wind damage. Inside the enclosure, bottom, there is plenty of light for crews setting aluminum window sash and pointing up around it. The lightweight concrete walls will be painted before windows are glazed.



## Contractors and Engineers staff

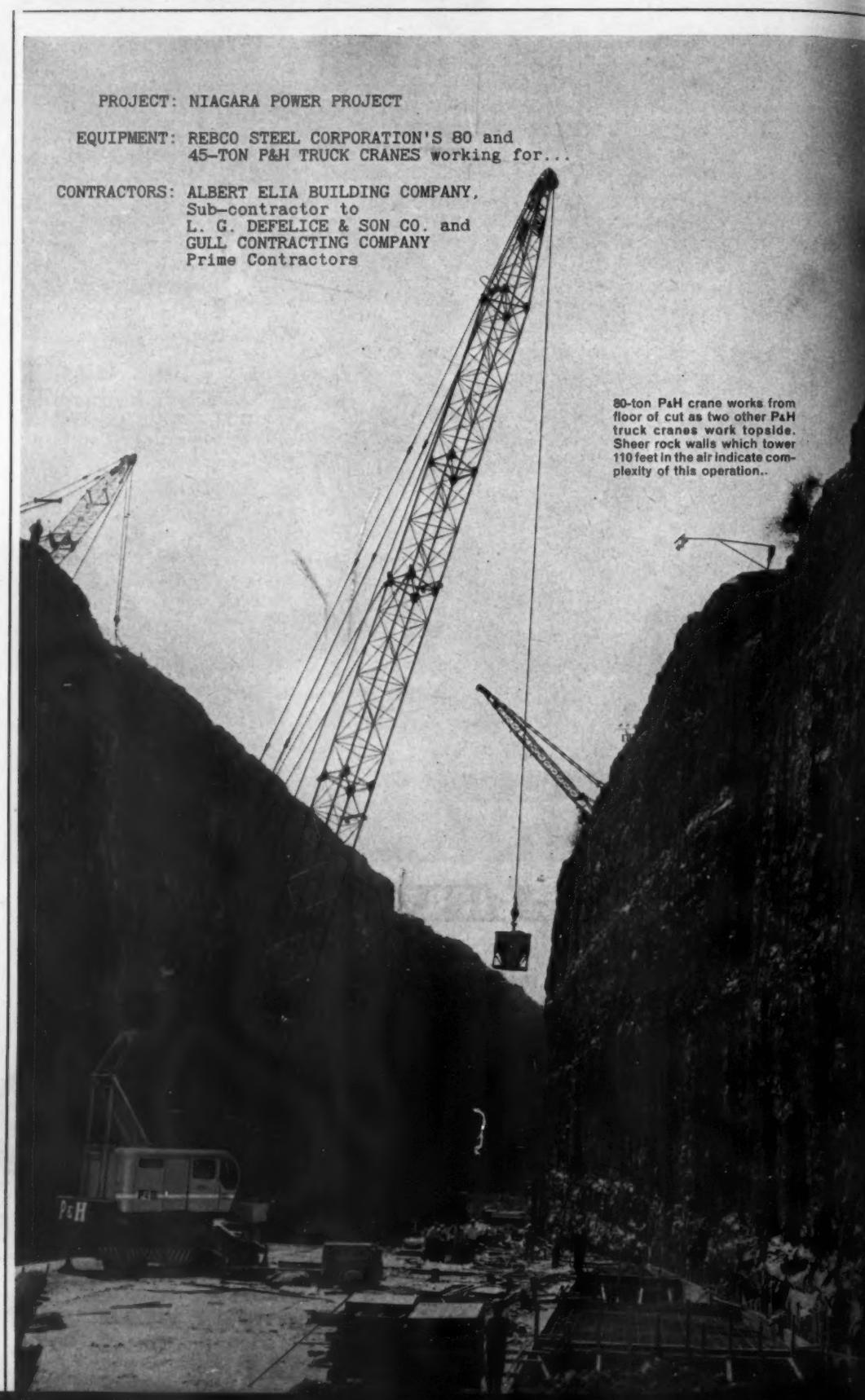
Sheets of Visqueen plastic film stretched the full length of the building and attached to projecting balconies at the roof and floor levels, enclosed two complete floors at a time so that work could proceed through winter on the new men's dormitory for the University of Nevada at Reno. A few oil and propane-burning heaters scattered through the rooms of



This Master B-125 oil-burning heater keeps an area warm enough so that workmen do not have to wear jackets as they install interior partitions. The compact, wheeled heater is easy to move from place to place.



Inside one room, a workman warms a roll of felt, that has been stored outdoors, at an Aeroll LP-gas-burning heater with an electric fan to distribute heat. The heaters are small enough to be readily moved.



## PROJECT: NIAGARA POWER PROJECT

EQUIPMENT: REBCO STEEL CORPORATION'S 80 and 45-TON P&H TRUCK CRANES working for...

CONTRACTORS: ALBERT ELIA BUILDING COMPANY, Sub-contractor to L. G. DEFELICE & SON CO. and GULL CONTRACTING COMPANY Prime Contractors

80-ton P&H crane works from floor of cut as two other P&H truck cranes work topside. Sheer rock walls which tower 110 feet in the air indicate complexity of this operation..

# Two floors at a time

the building provided enough heat for crews inside to work in comfort. With the enclosure located out at the outer edges of the balconies, it was possible to paint the exterior concrete walls of the structure before the windows were glazed or the doors installed.

Lembke Construction Co. of Nevada, Inc., Las Vegas, had the contract for the \$660,000 4-story dormitory as well as a \$1,194,000 Fine Arts Build-

ing, a \$370,000 dining hall, and the \$299,579 housing project for married people. All of these were under construction last winter. A new library is also being erected on the Reno campus by Stolte Inc., and a number of other new buildings are scheduled for construction in the near future.

The big building program at the University of Nevada is being administered and supervised by the State of Nevada Planning Board.



## Four-story dormitory

The main portion of the 4-story dormitory measures 37 x 249 feet. Each of the upper three floors has six living units that accommodate eight men each. The lower floor has two of these student units, plus an apartment.

The building frame was cast in place of lightweight concrete. Floors, walls, roof, and partitions are all concrete. A portion of the structure at

each end is faced with brick, but the walls on the long sides are of painted architectural concrete with brick trim.

The entire structure was formed with plywood-faced wood forms. All concrete was placed directly from the transit mixers by crane and bucket. A 100-foot boom was used for the long reach at the upper levels. The concrete and the brick masonry were substantially completed before the really cold winter weather set in.

When concrete had been placed for the roof, a temporary enclosure was built and heaters were operated for the 72-hour curing period. The tent-like enclosure consisted of 2 x 4 rafters rising to a height of about 5 feet at the center and covered with 4 and 6-mil Visqueen. Oil and gas-burning heaters were operated inside the tent to guard against freezing temperatures during the nights.

## Enclose two floors

Following a carefully planned schedule, Lembke enclosed the top two floors first while workmen painted the exterior concrete, installed the doors and windows, and did some interior work. Then, as the enclosure was moved to the lower two floors, steam heat was supplied to each room, and the interior finishing continued.

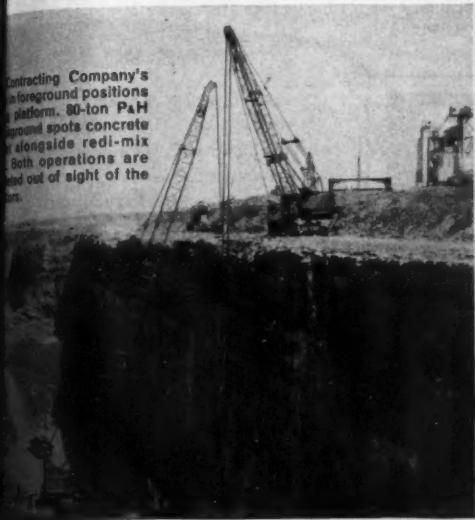
The contractor attached 2 x 4 nailing strips to the outer edges of the balconies, which cantilever out at the roof and floor levels. The crews then split a 20 x 500-foot roll of 6-mil Visqueen into two 10-foot strips and attached these strips to the nailing strips on the balconies to enclose a complete floor at a time. The Visqueen was placed in a single sheet that ran the complete length of the building.

Batten strips attached the Visqueen to the 2 x 4 nailing strips, and a few vertical battens were added to restrict the flapping and reduce the danger of damage by high winds.

The arrangement was particularly advantageous on this building because it provided a warm protected area outside the walls. With heat circulating through this area, the concrete walls remained warm and could be painted in midwinter, even though temperatures dropped as low as zero. The balconies were also ideal work platforms for the men setting window frames, glazing windows, and installing doors. These balconies serve as the corridors of the finished building, with all rooms opening onto them.

## Heaters for winter work

The required heat inside the enclosure was provided by five small portable heaters. Three used LP gas, the other two, oil. Two additional



## 3 P&H cranes help harness the mighty Niagara

**Joe VeRost, Rebco Steel Corporation's Vice President reports**—“The unusual conditions here at Niagara forced Albert Elia to operate the 80-ton P&H from the floor of the 110-foot deep cut . . . picking up concrete from a point on top of the cut, out of sight of the operator . . . swinging it out and over and lowering it to the bottom for the pour. In my opinion this could not have been done without Magnetorque swing drive.”

### 80-ton P&H “Feels in the Dark”

Sitting at the bottom of the cut and swinging 160 feet boom, Rebco's 80-ton P&H truck crane reached up and over the 110 foot wall to pick up loaded 2-yard concrete buckets that were out of sight. It swung them smoothly and easily up and over the lip and lowered them to the floor, where it poured concrete in flat forms. The “out-of-sight” operation was controlled and directed by telephones between the operator and the concrete foreman. Pin-point positioning with 160 foot boom—no simple task in itself—was made even more critical by the need to work this long boom “within inches” of the wall. It calls for extreme skill and smooth, immediate-action controls.

Mike Comerford, operator, praises Magnetorque—Without Magnetorque controlled swing it would have been almost impossible to handle this job. With friction switches, the boom whip would have been too violent—it would not have been possible to swing a few inches at a time. We have been making complete cycles in 2 minutes including pouring which required walking the bucket. To top it off we had to make 180 degree swings.”

### 45-ton P&H works topside—fishes deep

Rebco's 45-ton P&H truck crane, sitting on the very edge of the 110 foot cut, constantly lowered reinforcing equipment and concrete to the floor below. Operator Tom Wagner was also forced to operate “in the dark,” receiving directions and instructions by phone.

Tom Wagner says—“Smooth operation and accurate positioning of loads were possible with Magnetorque swing drive and immediate-action hydraulic control system of the P&H. They gave me more immediate control—and that's what we needed on this job.”

### 45-ton P&H truck crane positions drilling rig

A 45-ton P&H, belonging to Gull Contracting Company, operated from the top of the cut where it supports a movable drilling platform some sixty feet down the side of the sheer wall. “Triple-safe” Planetary Boom Hoist assured positive holding of the platform as holes were drilled in the side of the rock wall for steel reinforcing bars. The P&H lowered or raised the platform to new positions as soon as the holes were drilled.

### P&H gives unmatched performance

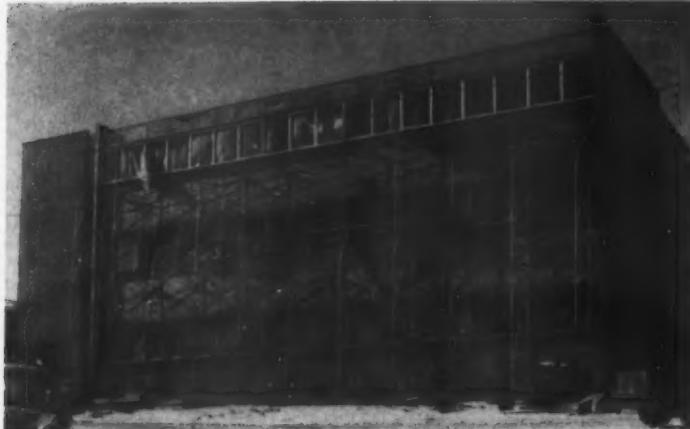
Rushing for completion of this huge project, contractors are putting men and equipment to extreme tests. Operating a two-shift program of ten hours each, the P&H truck cranes are used constantly, twenty hours out of the twenty four . . . six days out of the week. Under extreme endurance tests like this, P&H durability and ruggedness stand out . . . actually deliver more working time on the job.

For complete information on this job, write for Case History 121 or contact your P&H dealer for detailed facts on the complete line of P&H truck cranes.

# HARNISCHFEGER

Milwaukee 46, Wisconsin





The Fine Arts Building is also being built by Lembke Construction Co. of Nevada, Inc. It is partially enclosed with Visqueen as men work from the scaffolding to install windows. A housing project was also included in the contract, which covered work on several new structures.



A new dining hall is enclosed with plywood panels while interior work is being done. It was feared that a plastic enclosure would be subject to too much wind damage in this exposed location over a campus lake. The water level has been drawn down during construction.

## MECHANICS HAS ENGINEERED A SIZE AND TYPE JOINT FOR EVERY PRODUCT



The key Engineers who make MECHANICS joints have been doing so for nearly half a century. They know universal joints from basic design and final assembly, to use and final application. Use ALL the advantages of MECHANICS JOINTS—Compact Design—Key Drive—Perfect Balance—Less Weight—Fewer Parts—Easier Assembly—Quicker Servicing—“SPECIFY MECHANICS.” Our engineers will welcome the opportunity to help you design MECHANICS’ competitive sales and service features into your products’ power transmission system.

Export Sales: Borg-Warner International  
36 So. Wabash, Chicago 3, Illinois

### MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner, 2030 Harrison Ave., Rockford, Ill.

For more facts, use Request Card at page 18 and circle No. 268

(Continued from preceding page)

oil-burning heaters were available for emergency use.

One of the gas burners was a 200,000-Btu Aerol space heater. The other two were built locally to the contractor's order. All were equipped with electric blowers to aid in circulating the heat. The oil burners were Master B-125 and Concrete Equipment Co. CP-125 heaters.

All of these units were easily moved from room to room to provide comfortable working conditions. The heat that escaped through the open door and windows into the enclosed balcony areas was sufficient to keep them well above freezing even on the cold nights.

#### Personnel

Lembke's project manager in Reno is Charles E. White, Jr. During the winter, he supervised the work on the several buildings at the university campus as well as a new jail in the downtown area. The superintendent in charge of the dormitory and dining-hall buildings was Bill Denton. The carpenter foreman on the dormitory construction was Kenneth Knauss.

The inspector for the State of Nevada Planning Board on the dormitory and dining-hall projects was Al Funk. The manager and secretary of the State of Nevada Planning Board is M. George Bissell. Glenn C. Slater is the project coordinator for the board.

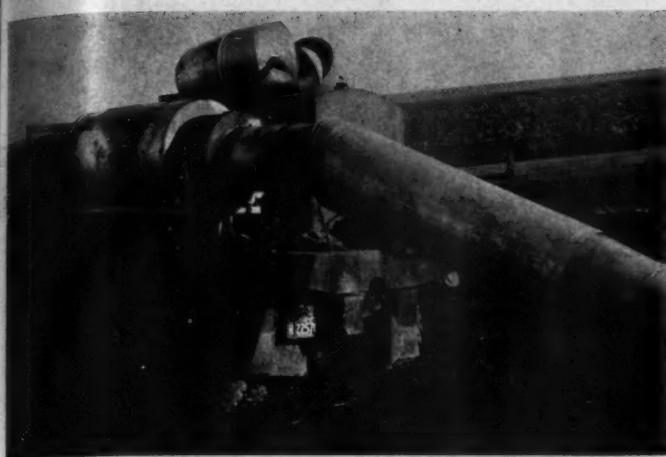
THE END

#### Winter does not affect new traffic counter

Traffic counts on the Baltimore Beltway are being made more accurate with a new traffic counter.

Unlike the older counters, which rely on a photoelectric eye to register traffic passing a given point, the new counter is actuated by magnetic detectors placed under the road surface, where ice and snow cannot affect its operation. With the photoelectric-eye type, snow and ice sometimes tend to obscure the lens so that it cannot function properly. The new, permanent counter has been installed on the Beltway just west of the Baltimore-Harrisburg Expressway.

CONTRACTORS AND ENGINEERS



A Stow unit heats 30-inch 4,000-foot-long sections of pipe in cold weather so that a tar covering will bond to them.

#### Case history

#### Space heater aids in pipe-laying project

The Engineering Pipe Line Ltd. Co. was laying a gas pipe line in Indiana. The problem was that the tar mixture used to cover the steel pipe before laying it in the ground would not bond properly, because of the cold winter weather.

To heat the pipe, the firm mounted a Stow S1000 portable direct-fired oil-burning space heater on the back of a truck along with a generator, and connected the shroud of the

heater to the end of the pipe. The heater fan, driven by a  $\frac{1}{4}$ -hp motor, in conjunction with an exhaust fan at the other end of the section of pipe, forced 7,000 cubic feet of warm air per minute through the pipe, thus keeping the pipe warm enough for the tar mixture to bond properly to it.

For further information write to the Stow Mfg. Co., Dept. C&E, 443 State St., Binghamton, N. Y., or use the card at page 18. Circle No. 54.



## Slab Forming with Symons Steel-Ply Forms

Steel-Ply Panels Used Twice Per Month . . .

Material Costs Reduced to 10 Cents a Sq. Ft.

Slab forms were stripped in 10 days without disturbing the support shoring; still met specifications calling for 28 days of slab support.

ing goes to White's top management, and to Superintendent Buck Mills. The Oakland office of Symons Clamp & Mfg. Co. also helped appreciably with advice on engineering design.

Here's how it was done. 4 x 6 girts, laid longitudinally with the floor slab, are first set in place on shores and flush with the bottom of the slab. When the slab is poured, it bears directly on the timber girt. Next, 2 x 4's are bolted to the girt to form a ledge. Symons 4 ft. Steel-Ply Panels, being light (42 pounds), are easily dropped in place on the 2 x 4 ledge. No connecting hardware is used on the panels . . . carpenters simply drive a nail through a form-hardware opening to the girt, on each panel, so that when the 2 x 4 ledges are removed, the panels will not fall.

16,000 sq. ft. of rented Symons Panels were used in slab forming. Used twice per month, material costs were reduced to 10 cents per square foot.

For the complete story on slab forming, just send in your request on your company letterhead. Symons Steel-Ply Forms can be rented with purchase option.

When constructing apartments on the campus of Stanford University, Palo Alto, California, the contractor Howard J. White, Inc. had one big problem . . . how to reduce slab-forming costs. Savings had to be made on the main 15-inch foundation slabs of the three buildings. And on the basement walls.

Credit for developing a way to use Symons Steel-Ply Panels for slab form-

**Symons CLAMP & MFG. CO.**

4251 Diversey Avenue Dept. K-O Chicago 39, Illinois

Warehouses throughout the U.S.A.

MORE SAVINGS FROM SYMONS

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OCTOBER, 1960

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### with MALS BARY HPC\*

\*HYDRAULIC PRESSURE COMBINATION cleaner, the power-packed machine that gives you, the user, 5 times greater cleaning ability than a conventional steam vapor cleaner. Only HPC produces the explosive 300-400 psi and uniform solution pattern needed to effectively blast away caked mud, grease, road oils, old paint, ice deposits. This efficient cleaning force comes from combining thermal and hydraulic pump-produced pressures—a Malsbary patented device. With HPC you do as much work in 1½ hours as you can do with a steam cleaner in 8 hours!

You have the task of maintaining big equipment...keeping it on the move and producing...you know saving downtime is the same as saving money. Join more than 6000 others now profiting with Malsbary HPC. Fill in the coupon today, and let us show you how HPC gets the job done—fast and satisfactorily. No obligation . . . and there's money in it for both of us.

**MALS BARY**

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Please send me  folder on Malsbary HPC cleaners;  information on buy-and-try plan.

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For more facts, use coupon or Request Card at page 18 and circle No. 270



Raising a slip form at a slow rate to compensate for slow set in cold weather, plus keeping concrete warm with heaters, made a winter job possible on cement-storage silos. One shaft of the Gold Medal tower delivers concrete; the man-lift is self-operated.



In addition to the Gold Medal tower, an Archer bucket hoist, right, is attached to the slip form for concrete delivery. Jacking equipment has been removed; workmen are adapting the form for casting the roof.



This building carried by the slip form houses the pumps and the control system for the jacks. A Soundpower phone keeps the station in touch with the batch plant. A mobile radio maintains contact with the field office.



## Slip forming is a winter job

(Additional photo on front cover)

by RALPH MONSON, field editor



This Noble plant batched concrete to transit mixers delivering to the hoists. Aggregates were kept from freezing, and warm water was used to provide a mix at about 70 degrees F. High-early-strength cement helped reduce the heating period.

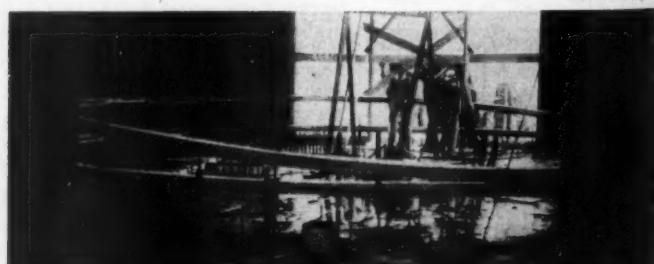


The operator of the Sasgen winch that operates the hoist in the Gold Medal tower is protected by a Visqueen hut. A small gas salamander heats the enclosure; supply tanks for the heater are outside.

Slip-form construction under winter conditions seems a difficult and complicated operation. But the contractors who built the new storage silos for the Ideal Cement Co. at Devil's Slide, Utah, worked right

through the winter in spite of snowfall and below-zero temperatures.

Gibbons & Reed Co., Salt Lake City, the prime contractors for the \$2 million project, sublet the slip-forming operation to Garff, Ryberg & Garff,



The inside slip form for interior bin-bottom supports involved making circular walls of 2 X 10's. Men block the 3-piece laminated walls to the required spacing. Heaters and Visqueen film keep the cold out.



The 1 X 4 vertical grain flooring is attached to the walls to line the 4-foot-high form. Internal bracing consists of a 2-foot-diameter steel cylinder in the center, with pipe spokes running out to the jacking yokes.

site of Salt Lake City. The silos will increase storage facilities at the Deville plant by about 200,000 barrels and will speed the loading of truck and rail transports.

Because of the slower set in cold weather and the need for keeping the concrete warm, the slip form was raised at a slower rate than usual. The maximum movement was 16 feet in 24 hours.

Specifications required keeping the concrete warm for 24 hours after placement. To accomplish this, the contractor hung a 16-foot-wide shroud of Visqueen 6-mil polyethylene film from the slip form and placed 20 gas-burning heaters inside it. Nine additional salamanders were placed inside the bins at ground level.

The temperature inside the silos seldom dropped below 70 degrees during the 14 days of continuous concrete placement in the slip form. Under the shroud on the outside, the temperature did get down as low as 45 degrees on a cold, windy night when the outdoor temperature hit 8 below zero. The average outdoor temperature during the 14-day period was 40 degrees; the average low was 14 above zero.

#### Nine silos in cluster

The new storage facility consists of nine cylindrical tanks in a cluster and four bins in the areas between the tanks. The tanks are 36 feet in inside diameter and 150 feet high. The walls are 9 inches thick. A second cylinder with 12-inch walls was cast inside each of the main tanks to a height of 65 feet to support the steel bin bottoms. This was cast as a separate slip-form operation in each tank after the main tank walls were completed.

The structure rests on a heavily reinforced concrete base slab 133 feet square and 54 inches thick. The bottom of this slab is 13 feet below grade. The space below grade contains scale pits and other service rooms.

The nine bins are arranged in three rows of three tanks each. A 17-foot-wide roadway goes through each row of bins at grade level so that truck transports can drive in under the bins, permitting quick loading and easy exit.

Supporting the roof deck are the 24-inch wide-flange beams that carried the deck of the slip form. The concrete roof, which was cast on the slip-form deck, is 13 inches thick at the center, tapering to 7 inches at the edges. The roof was cast in two pours—flat slab first, the sloping portion next.

#### Built during winter

Starting work late in September, Gibbons & Reed dewatered the site, made the excavation, and cast the heavy base slab. Four Stang wells and pumps were installed at the corners of the excavation to lower the ground-water level. These pumps were operated almost continuously during the construction period.

Garff, Ryberg & Garff started building the slip form in mid-November.

(Continued on next page)



The concrete base slab for the silos is 54 inches thick and 13 feet below grade, allowing for scale pits and other service rooms in the below-grade area. Uni-Form panels are in place for wall construction to extend the scale pits. Visqueen over silo openings protects work and crews inside.



## CLEVELAND DIGS SHALE AND ROCK 3-5 FT. DEEP FOR HIGHWAY DRAINAGE

**THE JOB:** 20 miles of drainage trenching in both inner and outer shoulders of five miles of dual highway for the relocation of U. S. Route 25 near Middletown, Ohio.

**CONDITIONS:** trench to be cut to grade, 18 inches wide, 3 or 5 feet deep depending on inner or outer shoulder, through very densely compacted shale and rocky material, further densified because much of the grade carried hauling equipment all through a winter, spring and summer.

**PERFORMANCE:** despite need to replace worn bucket teeth more frequently than usual because of the tough digging, a Cleveland J-40 dug the trench to accurate grade at the rate of 1,800 to 2,000 feet per 9 hour day.

#### J-40 FEATURES

- Stability—on wide-spaced crawlers, 1000-hour-lubricated
- 100% control of every operation at the operator's seat
- V conveyor for faster, higher, more efficient spoil discharge
- Pulley-enclosed dual, independent conveyor drive
- Automatic conveyor shifting from side to side
- Over 30 non-slipping digging speeds
- Digs trench 17½ to 30 inches wide, down to 5½ feet deep.

WRITE TODAY for Bulletin L-110, a detailed report on the performance of the J-40 on this tough highway drainage job.



# CLEVELAND TRENCHER

THE CLEVELAND TRENCHER CO., 20100 ST. CLAIR AVE., CLEVELAND 17, OHIO  
For more facts, use Request Card at page 18 and circle No. 271



This is one of the four Stang pumps that kept the site dewatered while deep foundations were built, then kept the area dry during the entire construction period.

(Continued from preceding page)

The big pour was started on December 10 and completed December 23. Concrete for the inside cylinders was placed during January and February. The entire installation, including the equipment, was completed this summer.

#### Heaters on slip form

Except for the heating equipment, the slip form was of the conventional type, using the B. M. Heede system of hydraulic jacks. The segments for the triple-laminated wales were cut from 8-foot 2 x 10's on a DeWalt saw. The 4-foot-high form was faced with 1 x 4 vertical grain flooring.

The slip-form deck was built up from the 24-inch wide-flange beams with 2 x 8 joists and 1 x 8 decking. The joists were suspended from the top flanges of the beams by Acme steel strapping. The strapping looped around a 2 x 4 purlin under a 2 x 8 joist, then ran up over the top of the beam and back around another purlin on the opposite side. When the straps were cinched up tight, they pulled the joists up snug against the underside of the top flange of the beam.

The 180 B. M. Heede hydraulic jacks that raised the big form were controlled from a single station on the deck. This station was enclosed in a small wooden building to protect the operators and the equipment from snow, wind, and cold, and to

keep the hydraulic oil warm.

Support for the heaters and the Visqueen shroud was provided by an additional platform below the formers' scaffold on the outside of the structure. This lower platform was placed 16 feet below the top of the form, and the 6-mil polyethylene film was attached between.

The lower platform inside the shroud carried 20 LP-gas-burning heaters. California Heater Co. and L. B. White supplied some of the different types of heaters used. Little Bertha Salamanders were placed inside the tanks. The gas tanks that supplied the heaters were kept on the slip-form deck for convenience in exchanging them, and the gas was piped down to the heaters.

In addition to holding in the heat, the clear plastic-film shroud admitted plenty of light for the finishers working directly below the slip form.

#### Continuous concrete placement

Gibbons & Reed set up a Neis concrete batch plant on the job site and supplied the concrete in transit mixers. The aggregates were protected from freezing, and warm water was used to produce concrete at a temperature of about 70 degrees F. Ideal Type III high-early-strength cement was used in the mix so that the heating period could be reduced to 24 hours.

The concrete was bucketed from the mixers to the slip-form deck in the 18.6-foot skip of an Arche bucket hoist powered by a CMC winch driven by a Cummins diesel engine. The skip dumped into a 37-foot bucket on the deck, and concrete was wheeled to the form in buggies.

A 185-foot-high Gold Medal double tower also served the slip form. A 27-foot skip in one of the shafts discharged into a 2-yard tower hopper that was kept ahead of the slip form. Chutes from the tower hopper transferred the concrete to a Gar-Bro 2-yard hopper on the deck. Buggies were also loaded from this hopper.

In the other shaft of the tower, the contractor installed an electric-powered man lift, with controls at the top and bottom and in the cage so that the lift could be self-operated. This left the operator of the Le Ro-powered Sasgen winch free to handle the concrete bucket and the Chicago boom.

The concrete was very carefully vibrated with Stow and Viber electric-powered vibrators. Because of the slow set in the cold weather, the vibration became a delicate job.

After the finishers had touched up the surface below the slip form, they applied a spray coat of Techkote clear curing compound to the exterior of the tanks and a coat of A. C. Horn parting compound on the inside.

On the slip-form operation, the crews worked two 10-hour shifts, taking an hour for lunch and leaving an hour between shifts to stretch the work over the 24 hours of the day. The 150-foot lift was made in 14 days.

When the slip form reached the top of the tanks, the jacks and jack yokes were removed and the deck

(Continued on page 47)

## DOLLARS INVESTED IN

### HENDRIX DRAGLINE BUCKETS



*...are working dollars!*



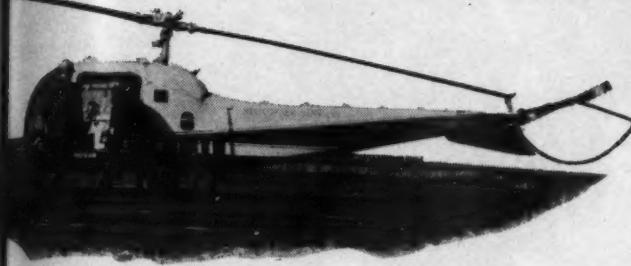
"A Type for Every Digging Purpose"  
1/4 to 40 Cubic Yards — Perforated or Solid

HENDRIX MANUFACTURING CO., Inc.  
MANSFIELD, LOUISIANA

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B.F. Goodrich

# Copter hop over the new Niagara



Ride in the Bell Ranger  
and see how B.F. Goodrich  
tires help build the world's  
mightiest power project

**SOON THE CHURNING WATERS** of the Niagara River will be generating more electrical power than ever—over two million kilowatts, enough to light a city the size of Chicago.

More electricity at lower cost is what we'll get from the \$720-million Niagara Power Project, one of the biggest peace-time construction jobs in our history.

Already trucks and other earth-movers have shouldered their loads more than 800,000 times—enough trips to take them ten times around the world.

To cope with the challenges of this and other tasks, Merritt-Chapman & Scott Corporation, largest contractor on the project, uses B.F. Goodrich tires and other products.



**NOW WE'RE AT 3,000 FEET.** Below us is the entire Niagara Project. At the upper right are the Falls. At upper left,  $2\frac{1}{2}$  miles above the Falls, is the Intake Area. Here water will be diverted from the Niagara River into 2 giant covered conduits, each of which is as wide as a 4-lane highway and 5 times higher than the Holland Tunnel. These conduits

take the water into the vast Storage Reservoir. From there it moves to the new Niagara Generating Plant, where it plummets down to drive 13 generators. Turn the page and learn how this mammoth job is progressing with the aid of B.F. Goodrich tires.

*This B.F. Goodrich report continues ▶*

For more facts, use Request Card at page 18 and circle No. 273

**B.F.Goodrich**



**SWOOPING DOWN** we come over the conduit area that will carry water from the Niagara River to the new reservoir. Excavations for the 46'-wide covered conduits are 110' x 50'. The trucks below us, hauling away rocks, are equipped with

B.F.Goodrich tires. Altogether, more than 2100 B.F.Goodrich tires—on dump trucks, loaders, graders and other equipment—work 'round the clock, six days a week, rolling over rock-strewn Niagara excavation sites.

## See how 2100 B.F.Goodrich tires

**B.F.GOODRICH ROCK SERVICE TIRES** have run up amazing service records at Niagara—over 5,000 hours in some cases! The new B.F.Goodrich Cut Protected tread compound is outstandingly successful at withstanding cutting and chipping from abrasive Niagara rock. Massive double-chevron Rock Service cleats give extra traction in forward or reverse. And because of the B.F.Goodrich Flex-Rite Nylon cord body, Rock Service tires are almost immune to heat blowouts and flex breaks. Result: you get more original-tread hours of service, more retreadable tires.



**TO GIVE CONTRACTORS** what they need when they need it, B.F. Goodrich built a warehouse near the Niagara project. A complete line of B.F. Goodrich tires is stored, ready for every emergency. At the B.F. Goodrich Tire Service Building on the job site, a crew of trained tire maintenance men works in shifts, 'round the clock.

**IT'S AN EMERGENCY**, and the B.F. Goodrich Tire Service Man is there. He's trained to handle any type tire on any type equipment. He has at his disposal all the latest power tools, such as hydraulic cranes, pneumatic wrenches, bead jacks. Background: 13 penstocks at Niagara Generating Plant will direct torrents of water into giant turbines. Penstocks are 462 feet long.



**B.F. Good**

## Tires are helping men harness Niagara

B.F. Goodrich equipment over rock.

From the beginning of work on the Niagara Power Project, B.F. Goodrich on-the-scene specialists have helped determine exactly the right B.F. Goodrich product for each particular job. In addition to Rock Service tires (now available in the new Cut Protected compound), B.F. Goodrich Rock Logger, Tractor Grader, All-Purpose, Mud-Snow and Power Express tires are at work. B.F. Goodrich hose feeds air to machines drilling dynamite holes. B.F. Goodrich rain suits, gloves and footwear protect hundreds of construction workers.

B.F. Goodrich conveyor belts will carry materials for 1,300,000 cubic yards of concrete, total required for the entire generating plant. And helping to keep the whole project humming are special B.F. Goodrich maintenance and service facilities—all part of the new B.F. Goodrich Unified Contractor Program.

No matter what your off-the-road job, B.F. Goodrich is ready to serve you, and help you save. Your Smileage dealer is listed under Tires in the Yellow Pages of your phone book. *The B.F. Goodrich Company, Akron 18, Ohio.*

**SPECIFY B.F. Goodrich Tubeless or tube-type tires when ordering new equipment.**

**B.F. Goodrich**



# Smileage!

## B.F. Goodrich *off-the-road tires*

For more facts, use Request Card at page 18 and circle No. 273

(Continued from page 38)

was modified to become the form for the concrete roof of the structure.

#### Slipping inside cylinders

While the main structure was cast as a single monolithic unit, the inside cylinders that support the bin bottoms had to be cast separately. Three forms were built so that three cylinders could be constructed at the same time. When these forms had climbed to the required 65-foot height, they were lowered back to the bottom with Beebe hand winches mounted on the roof. Then they were partly dismantled and moved ahead to the next bin. Thus each form was used three times.

These inside forms were somewhat

complicated because they were inside forms only: the concrete was cast directly against the outer tank walls. The yoke beams were modified to fit the situation, and 4½-inch plywood wheels were attached to the upper ends to bear on the outer walls.

The yokes reached down to the lower wale of the 4-foot form and were stabilized by a series of adjustable spokes radiating out from a central hub. The hub was a 24-inch-diameter cylinder, 30 inches long, made of ½-inch steel. The spokes were 1½-inch pipe, which fitted into 2-inch pipe sleeves welded to the hub. One-inch-diameter threaded rods provided the adjustment between the spokes and the jack yokes. Each of the inside forms was carried on 16 of the Heede jacks.

#### Hoist concrete through form

Getting the concrete up to the form inside the tank was one obvious problem. The contractor solved this by means of a separate electric-powered hoist in each of the three tanks, with the hoist line run over a sheave suspended from the roof of the tank. The hoist raised the Gar-Bro concrete carts from ground level through an opening in the center of the form. Once a cart was landed on the deck, the crew wheeled it around the circumference of the form to the point of placement.

The transit mixers delivering the concrete drove up onto a ramp in the middle passageway and discharged directly into a Gar-Bro hopper. Buggies were filled from this hopper and wheeled to the three

tanks where the work was under way.

All other openings in the tanks, except the one through which the concrete was delivered, were closed with Visqueen. A few salamanders provided enough heat during the placement.

Although three of the inner cylinders were being poured at a time, the operations were separate. There were three separate forms and three crews. The central delivery of concrete and the supervision of the three crews by the same supervisory staff made this type of operation economical.

After the slip-form operations were completed, Gibbons & Reed completed the grade slab, installed the steel bin bottoms, and placed all of the equipment required by the facility for conveying, handling, and weighing cement.

#### Personnel

The supervisory staff for Gibbons & Reed Co., the general contractor on the project, included superintendent Richard Teeple, project engineer Bill Gear, and carpenter foremen Lloyd Willden and Grant Marby. For Gar-Bro, Ryberg & Garff, supervising partner Eric Ryberg spent a considerable amount of time on the job, giving all of the slip-form operations his personal attention. The project superintendent was Lawrence Goff, and the assistant superintendent, Stan Singleton. Carpenter foremen were Bert Martin and Bill Leffler. The delicate sawing work in the form shop was supervised by Al Jenkins.

The Ideal Cement Co. was represented on the job by project engineer Jack Haeger.

The Eu

#### Case history

#### Vacuum system used to heat aggregate

A vacuum-cooling system was installed in the spring of 1959 for cooling mixing water, sand, and aggregate for the Charlotteburg Dam, built by the city of Newark, N. J., for its municipal water supply.

Although this equipment was purchased exclusively for the purpose of cooling, it was found that additional winter operation was possible and practical by using it for heating. No change in the equipment was required—it was only necessary to add a steam connection at any convenient point on the aggregate vacuum-cooling vessels.

A major difference in vacuum heating and vacuum cooling is that a wider temperature range is available for heating than for cooling. Usually in large dams the heat of cement adds a substantial amount to the cooling load. The reverse is not true in winter when heating is necessary. Aggregates which are at temperatures from subfreezing down to zero or even less, can easily be heated up to 100 degrees F or any desirable higher temperature.

For further information write to the Croll-Reynolds Co., Inc., Dept. C&E, 751 Central Ave., Westfield, N. J., or use the Request Card at page 18, Circle No. 97.

CONTRACTORS AND ENGINEERS

# ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

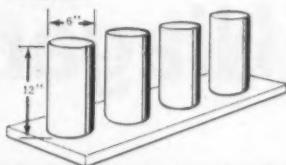
## news and notes from the field

### CONCRETE TEST CYLINDERS—the right way to make them

A concrete test specimen seldom seems very important at the time it is being made. However, if trouble develops with concrete on a job, the test specimen immediately becomes a critical factor, regardless of the size of the project.

A concrete producer can guarantee concrete strength only if test specimens are made and cured according to standard methods. Concrete compression tests are made to determine concrete quality. If curing conditions, methods of sampling and methods of casting are allowed to vary, strength results are worthless because one can seldom determine whether a low strength is due to poor quality concrete or poor practices after concrete left the ready mix truck. For reliable test results, the following test procedures should be followed:

#### 1. Use only non-absorptive molds



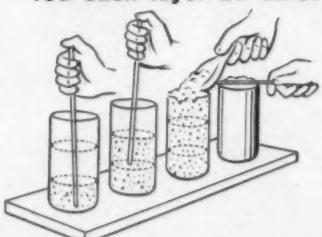
Steel, or paraffin-sprayed paper molds, 6" in diameter by 12" high, are usually used for casting concrete cylinders in the field. Before filling, they should be placed on a smooth, firm, level surface. A single strength test is generally defined as consisting of an average of 3 standard test specimens. Therefore, be sure to make at least 3 cylinders for each age test—usually 7 and 28 days.

#### 2. Take sample from 3 parts of load



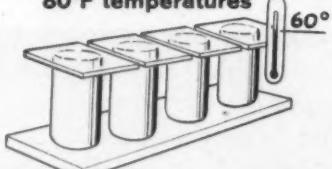
A sample should be obtained from at least 3 parts of the load and taken directly from the truck or mixer discharge. Before filling the molds, the individual portions of the sample should be thoroughly re-mixed in a large flat pan, wheelbarrow or on other clean, non-absorptive surface.

#### 3. Fill molds in 3 layers and rod each layer 25 times



Molds should be filled in 3 equal layers, and each layer rodded uniformly 25 times with ½" bullet-pointed rod. When rodding upper layers, the rod should just extend through into the layer underneath. All molds should be filled uniformly—that is, place and rod the bottom layer in all samples, then the 2nd layer, etc. The 3rd layer should contain an excess. After tapping sides of mold with rod, strike off excess with trowel.

#### 4. Let cylinders stand from 12 to 24 hours in 60° to 80°F temperatures

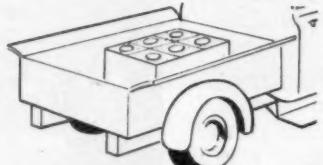


Cylinders should be left undisturbed until they have hardened enough to withstand handling—from 12 to 24 hours after casting. Tops should be covered with glass plates, oiled paper, wet burlap or similar material to prevent loss of moisture. The temperature should not drop below 60° or rise above 80°F where cylinders are stored. Cylinders left on the job for several days at low or high temperatures will give erratic results unless carefully protected.

#### 5. Cure and handle cylinders with care

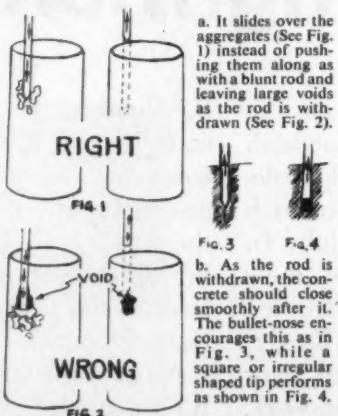
After setting for 12 to 24 hours, cylinders should be placed in moist curing at 70° or

sent to a laboratory for standard curing. Careful handling is still necessary since cylinders which are allowed to rattle around in a box, or the back of a car, or pickup, can suffer considerable damage. Use sawdust or similar material for cushioning.



#### Use a bullet-nose rod

The purpose of rodding test cylinders is to compact the concrete and make it free of the large air voids which reduce strength. Too many people reach for the handy piece of reinforcing steel to rod the concrete. Some just kick the mold instead of rodding. It has been found that the bullet-nose ½" rod does the job best for two reasons:



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**ALPHA**  
PORTLAND CEMENT COMPANY  
Alpha Building, Easton, Pa.

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## WINTER WORK

### From earthmoving to snow moving

Contractors and Engineers staff article

When the snow starts flying in Chicago, many excavating contractors go to work moving snow instead of dirt.

In bad weather, when most construction is shut down, their men and equipment are busy plowing streets and clearing parking areas. The snow-removal work brings in extra money, keeps men working, and improves public relations.

Cowhey Material & Fuel Co. is one contractor that makes the most out of Chicago's snow storms. This firm and its subsidiary, Forrest Paving & Equipment Co., also of Chicago, keep their equipment busy clearing streets, parking lots, and sometimes airports.

When a storm strikes, their fourteen transit-mix trucks mount front-end plows and start clearing streets for the Chicago Transit Authority. The plows, mounted on Mack trucks with Challenge mixers, keep the bus routes of the CTA clear of snow. The CTA furnishes the plow as well as a guideman to accompany the driver. For a truck and driver, Cowhey receives \$10 per hour. When sanding as well as plowing has to be done, the contractor makes use of 6-wheel dump trucks mounting A-frame plows.

Clearing of parking lots, motel areas, and driveways is ideal for the company's three Hough rubber-tire front-end loaders. The versatile rig can maneuver in tight areas and can use its shovel as a plow, or as a scoop to lift the snow into piles. Each rig generally operates on its own, moving from job to job over the city's streets.

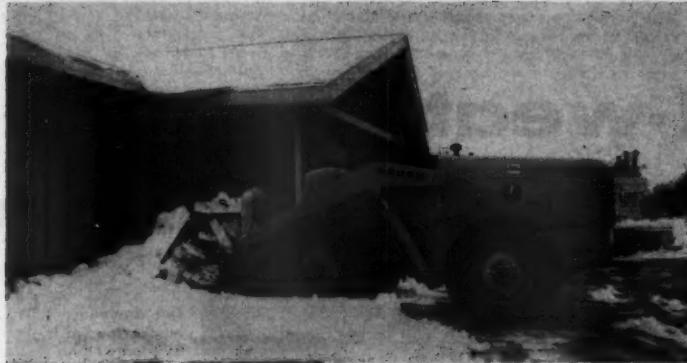
Often the company's two motor graders—a Galion and a Caterpillar—are called upon to move snow. Since they are not as maneuverable as the front-end loaders, they generally work on streets or at airports.

Bill Cowhey, president of the company, looks at snow removal as a worthwhile side line. "We certainly don't get rich moving snow," he says, "but it does keep our equipment busy, and it gives our men a chance to make a little extra money."

There's a public-relations angle to the work, too. As Cowhey puts it, "Anybody who helps dig Chicago out from under a snow storm is a hero in the eyes of the public. And in clearing parking lots and motel areas, we come in contact with potential customers. If we do a good job of clearing snow from a man's lot, he may ask us to supply the ready-mix concrete for his next building addition."

THE END

For more facts, use Request Card at page 18 and circle No. 275



A Hough loader with 2-yard shovel clears an area around a motel after a snow storm in Chicago. Snow removal on streets, parking lots, and even airports is a winter side line with Cowhey Material & Fuel Co., Chicago, and its subsidiary, a paving company. The loaders, able to work in tight spots to clear and pile snow, generally handle the smaller jobs; graders are assigned to tougher clearing work.



**R-10** TEN TONS

**R-18** 18 TONS

**R-22** 22 TONS

**R-27** 27 TONS

**R-40** 40 TONS

**R-55** 55 TONS

**PLUS**

**12, 22 and  
35-TON**

**SEMI-  
TRAILER  
REAR-  
DUMPS**

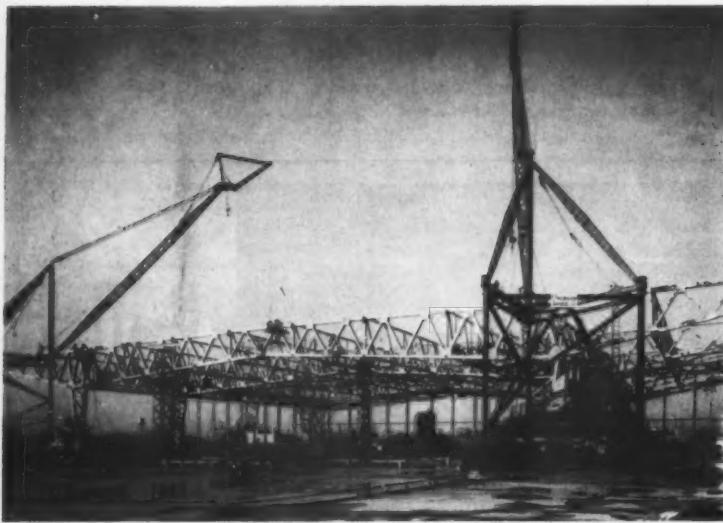


**EUCLID EQUIPMENT**

FOR MOVING EARTH, ROCK, COAL AND ORE

# Cold-weather work keeps job on schedule

WINTER  
WORK



Two traveling stifflegs place steel for Chicago's Exposition Center. Wood blocks, topped by box girders carrying rails for the derricks, keep the rigs' 190-ton weights on the columns. Temporary bents of crane boom sections are used to erect truss sections across the 210-foot center spans.

#### Contractors and Engineers staff article

**W**ork on Chicago's \$35 million Exposition Center, continuing through two biting winters, kept the job to the construction schedule and makes possible the building's formal opening this year.

Driving piles or erecting steel, men hunched their shoulders against the knifelike winds hurled across the ice of Lake Michigan. During the first winter, scrapers and draglines bit into the frosty soil to level out and extend the 30½-acre site at 23rd Street and the lake front. Most of the 2,200 H-beam piles that support the

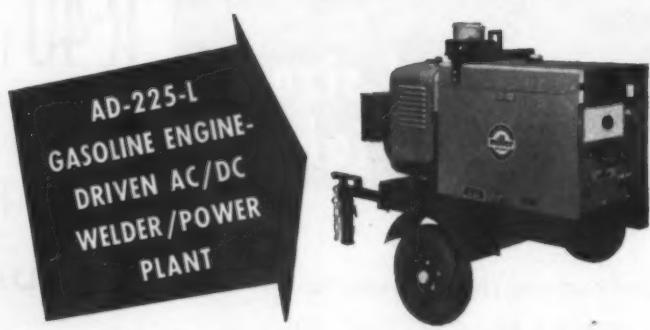
building were driven at that time.

During the '59 deep-freeze season, ironworkers erected most of the 7,000 tons of structural steel that framed the main exposition area. While these men worked in zero weather, plumbers and bricklayers worked in shirt-sleeves on the closed-in floors below.

#### Steel and concrete structure

The 1,080 x 340-foot building contains two main levels and a partial basement. Because of the sloping ground, the first floor is at ground level on the lake-front side, while the second floor is at ground level on the city side.

## NEWEST OF THE GREAT NEW MILLER WELDER/POWER PLANTS



This is as close to being "an all-around hand" as you're ever likely to find. For instance:

**A-C or D-C WELDING.** The AD-225-L produces 300 amperes at 30 volts a-c or 225 amperes at 30 volts d-c - both at 100% duty cycle. Ample open circuit voltage gives superior results with a-c, d-c or a-c/d-c electrodes.

**METALLIC INERT GAS WELDING.** Using the d-c side of the AD-225-L, and with new style hand guns feeding small diameter wire from spools, aluminum, mild or stainless steel may be welded by the MIG process. Power for the gun is provided by the 115 volt d-c outlet.

**A-C POWER PLANT.** As an a-c power plant, this model produces 7 KW of 115/230v single phase 60 cycle current.

**AUXILIARY D-C POWER.** While welding, the AD-225-L delivers 1 KW of 115v d-c which is ample for operation of flood lights, power tools, etc.

Complete information sent promptly.

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ELECTRIC MANUFACTURING CO., INC., APPLETON, WISCONSIN

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal

For more facts, use Request Card at page 18 and circle No. 276

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Up To  
One  
Third  
On  
Wire  
Tying  
Costs



"On-the-job" comparison tests have proved the Ideal Tie Wire Reel can save up to 33 per cent in wire, and speed tying by 25 to 30 per cent. That's why so many contractors have switched to the "Ideal" method for all their wire tying applications.



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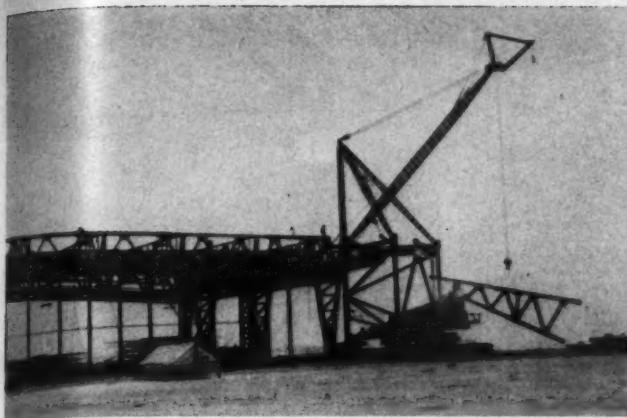
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CONTRACTORS AND ENGINEERS





One of the derricks, with a 3-legged tower carrying a 105-foot boom and 20-foot jib, picks up a 15-ton, 80-foot cantilever section of frame at an 85-foot radius. A 4-drum hoist on the rig supplies pulling power to the lines. Derricks reach over the side of the building to pick up steel.

The first-floor area is built of reinforced concrete—floor, columns, and dome-pan flat slab overhead. The second floor, which encloses the 300,000 square feet of exhibition area, is framed with big steel trusses and columns. The steel trusses, supported by two lines of columns, have a 210-foot center span and 80-foot cantilever spans.

#### Winter construction techniques

In keeping work moving through two winter seasons, Gust K. Newberg Construction Co., Chicago, the contractor for the general work, made good use of cold-weather techniques.

In the driving of the steel piles, extensive use was made of straw to keep the ground from freezing. After the excavation was made for a pile cap, the hole was filled with straw and piles were driven through it. The straw kept the ground from freezing, made driving easier, and also made it possible to pour the pile cap.

During the second winter, masonry, plumbing, and electrical work continued on the lower levels under comfortable working conditions. The enclosed area of about 350,000 square feet was heated by two oil-fired 180-hp boilers made by Vapor Heat-

(Continued on next page)

#### CENTER FACILITIES

**Main exhibition area:** A total of 300,000 square feet of floor area is available on the upper level, with 30-foot minimum and 40-foot maximum clearance. The reinforced-concrete floor is designed for 400-psf live loads. Folding partition walls can divide the hall into three separate exhibit areas.

**First-floor level:** A 5,000-seat theater-type auditorium and an assembly hall seating 500 are on this level, plus 14 meeting rooms that can accommodate from 200 to 800 people. There is a dining room seating 500, plus a self-service restaurant.

**Conveniences:** The center will be completely air-conditioned. Utilities for displays from conveniently located outlets will provide electricity (110, 220, 440-volt), water, drainage, gas, compressed air, and telephone service. Heavy-duty freight elevators will serve both floors. Floors will also be linked by stationary and moving stairs.

**Transportation, parking:** Located 2½ miles from the center of Chicago's Loop, the center will be served by regular bus lines. Buses or automobiles may drive through the building at the lower level to discharge passengers. An adjacent parking lot will accommodate 7,500 cars; and a terminal, 400 taxis.



#### with BRUNNER & LAY Rok-Bits and drill steel

Brunner & Lay rock drilling tools are the mainstay of contractors who must keep up fast, uninterrupted drilling. They produce ROUND, easily-loaded blast holes. Provide better and bigger chip clearance, to keep hole cleaning operations at a minimum. The job-fitted carbides stay put to give big daily footage, at lowest cost. Proved on every type job, and machine.

Check your present tools against them. Call our local dealer, or nearest plant—request catalog #759.

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**Brunner & Lay** carbide ROK-BITS • DRILL RODS  
INTRASET STEEL • COUPLINGS, ADAPTERS, SECTIONAL STEEL, STRIKING BARS • Standard or  
ROPE thread • MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, etc.

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OCTOBER, 1960



## HAULING PROFITS UP with Rockford Spring-Loaded Clutches

Rockford Clutch equipped trucks move thousands of tons of limestone per day in construction and quarrying work. Here, higher power means higher profits. That's exactly what you get with Rockford Spring-Loaded Clutches—positive, full-motion driving power with cushioned starts and controllability. These rugged clutches are also used on haulers, loaders, graders, tractors and other vehicles where the clutch is in constant use. Write today for illustrated brochure.



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CLUTCH

## ROCKFORD CLUTCHES

ROCKFORD CLUTCH DIVISION



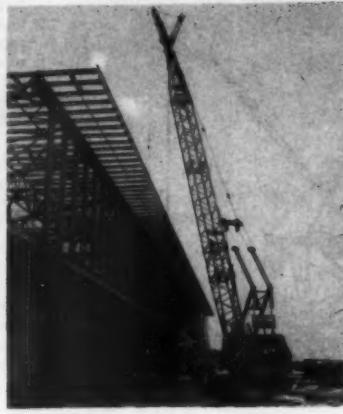
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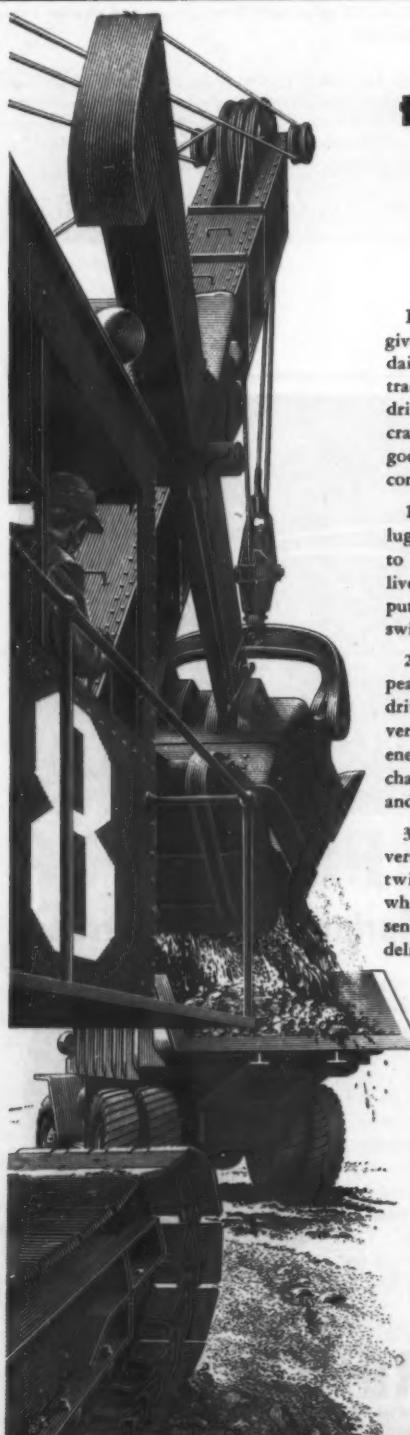
Even though temperatures are near the freezing point and snow covers the ground, the stiff steel derricks are ready to start placing steel for the 5,000-seat auditorium of the new exposition center for the Windy City. Work on the project, done through two winters, kept the job on time. The facility is expected to be completed and ready for use in a short time.



On the lake-front side of the building, a Manitowoc 4000 crane shakes out steel members from a stockpile area. This crane, plus others, feeds members to the traveling derricks.



Polyethylene plastic made by Warp Bros., Chicago, is attached to vertical 4 x 4 shores and horizontal 1 x 6's to enclose the first-floor level during work. Solid plywood sheets are used at the bottom.



## Here's why torque converter equipped machines do more work at lower operating cost

For higher work capacity on any given load, and for greater all-round daily production, more and more contractors are specifying torque converter drives in their new excavators, erecting cranes and loaders. And here are five good, profitable reasons why the torque converter is the preferred type of drive:

1. The torque converter eliminates lagging and stalling... permits engines to work at maximum efficiency delivering constant high-horsepower output for heavy digging loads and fast swinging.

2. Smooth converter power reduces peak loads throughout the machine's drive train because fluid within the converter absorbs much of the impact energy caused by quick drum speed change... thus protecting both driving and driven equipment.

3. When necessary, the torque converter smoothly delivers approximately twice normal torque to the drum, which, at slow digging speeds, represents an important advantage in power delivered to the dipper.

4. Cable life is extended since no sharp impact loads ever reach cables through the torque converter... constant line tension is maintained... there's no jerking or snapping.

5. An infinite variety of ratios is available to work with... permitting smooth, accurate, safe control of loads and delicate "inch" and "holding" under power... as well as adjusting for wide variations in dipper loading, substituting greater digging effort for speed, when required.

Wherever earth and rock are moved, wherever steel is erected, you'll find contractors using these five advantages... to convert their horsepower into greater-than-ever profits!

• • •

**Twin Disc Torque Converters**  
three-stage or single-stage, from 30 to 1000 hp—are available from all leading manufacturers of heavy-duty machines. Be sure to specify one in your next unit. Take advantage of the five reasons why torque converter equipped machines do more work at lower operating cost.

Twin Disc is the world's leading manufacturer of friction clutches and fluid couplings for heavy-duty industrial applications... and the only manufacturer producing both three-stage and single-stage torque converters. Because of its complete line of industrial drives, Twin Disc can offer unbiased recommendations for any heavy-duty power transmission application.



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For more facts, use Request Card at page 18 and circle No. 280

(Continued from preceding page)

ing Corp. The steam was carried by a main header line hung from the ceiling of a central corridor on the first floor. Smaller lines branched off from the main line to about 15 blower-type heaters. (When the two boilers have served their purpose, the contractor intends to convert them to steam generators for pile-driving equipment.)

The area in the building that was not enclosed by permanent window walls was shut off from the cold by transparent polyethylene plastic secured to wood frames. Adjustable 4 x 4 shores, extending from floor to ceiling, made convenient vertical members for the frame. The horizontal members were generally 1 x 6's. The bottom 4 feet of the frame was built of solid plywood sheets.

Most of the 55,000 cubic yards of concrete in the building was scheduled to be placed during the regular construction season. The formwork for the structural slab was supported by Beaver-Advance tubular scaffolding. The sturdy scaffolding was adjustable at both top and bottom. It carried 3 x 6 and 4 x 6 purlins supporting a solid plywood decking. Nailed to the plywood were 14-inch-deep Ceco dome pans.

### Main floor is post-tensioned

The exposition-floor slab, in addition to having reinforcing steel, was strengthened by 15 post-tensioning units, each designed for a load of 105,000 pounds. The units, located at the center of the 1 1/2-foot-thick slab, were strung across the 340-foot width of the building. They ran in the solid part of the slab, several feet out from the column lines.

Each of the units, supplied by Ryerson Steel Co., contained thirty-two 1/4-inch high-tensile wires. After the concrete had attained a 28-day strength, the units were post-tensioned from both ends simultaneously by the 200-ton hydraulic jacks. The BBRV system was used in the tensioning.

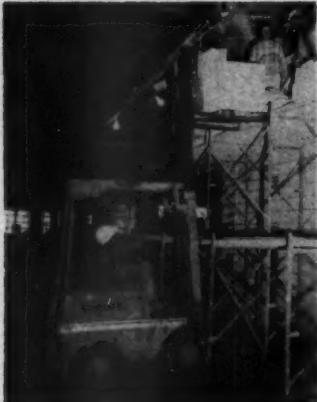
Getting the concrete to the desired position in the acres of formwork presented a problem. It was solved by two Rex Pumpcrete machines that pumped concrete to the almost in-



The Sky Witch, its platform height controlled by a hydraulic cylinder, is used by plumbers to install a line. The rig is made by The Charles Machine Works, Perry, Okla.



Beaver-Advance scaffolding supports forms for the 19-foot cantilevered walkway that rims the main floor of the building. Here, scaffolding is dismantled for moving to another area.



A Clark fork-lift feeds concrete block to men working on a partition wall. The main header line supplying heat is at a height that will not interfere with installation of permanent lines.



Welders work in the main exhibition area during a cold snap. Note the V-shaped truss columns at 60-foot centers that support the 210-foot center span and 80-foot cantilever spans.

accessible locations. One machine served one-half of the building; the other pumped to the remaining area. In easy-to-reach locations, the concrete was placed by crane and bucket. The job was supplied with ready-mix concrete.

#### Complicated steel erection

Erection of the giant steel trusses, done by American Bridge Division of U.S. Steel, was a big and complicated job. Work with two heavy traveling derricks on the finished floor slab called for special precautions. Although the floor was designed to withstand a 400-psf live load, it was not designed to take the loading of the two derricks. Each weighed 190 tons.

To keep the weight off the suspended slab, crews placed wood blocks directly above the columns. Box girders resting on the blocks carried rails for the traveling derricks. This put the load directly over the columns.

On each derrick, a 35-foot 3-legged tower carried a 105-foot boom and a 20-foot jib. A 4-drum hoist, mounted on the rig, furnished the pulling power to the lines. At an 85-foot radius, the rig was capable of lifting 20 tons.

The two derricks started at the north end of the building on about the steel-column lines and moved toward the south end, completing the erection as they went along. The

(Continued on page 50)



**AGAIN . . . Ford Industrial Engines are selected for outstanding performance and dependability . . .**

## Versatile Ford-powered Hydrocrane provides 70 feet of lift with its "boardinghouse reach"

Meet the smooth-working Bucyrus-Erie H-5 Hydrocrane which features a hydraulically telescoping boom that allows you to "inch" 12-ton loads under wires, limbs and through apertures with precision control. Just as Ford power contributes to the effectiveness of the H-5, it can bring a new kind of efficiency to your equipment. Here's why:

**DURABILITY AND ECONOMY . . .** Ford's Short Stroke design and Deep-Block construction cut friction, vibration and wear. Overhead valves permit higher compression ratios, greater power output and make servicing easier, quicker and less costly.

**COMPACTNESS . . .** Thanks to Ford's space-saving design and advanced engineering features, all Ford engines now develop more power per pound of engine weight than ever before possible.

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Dick Ryabik, field engineer, and "Blackie" Easter, superintendent for American Bridge, talk over steel erection plans for the center.

OCTOBER, 1960

**PARTS AND SERVICE . . .** With more than 10,000 Ford Dealerships in the U.S. alone, you can get prompt, efficient service wherever your job takes you.

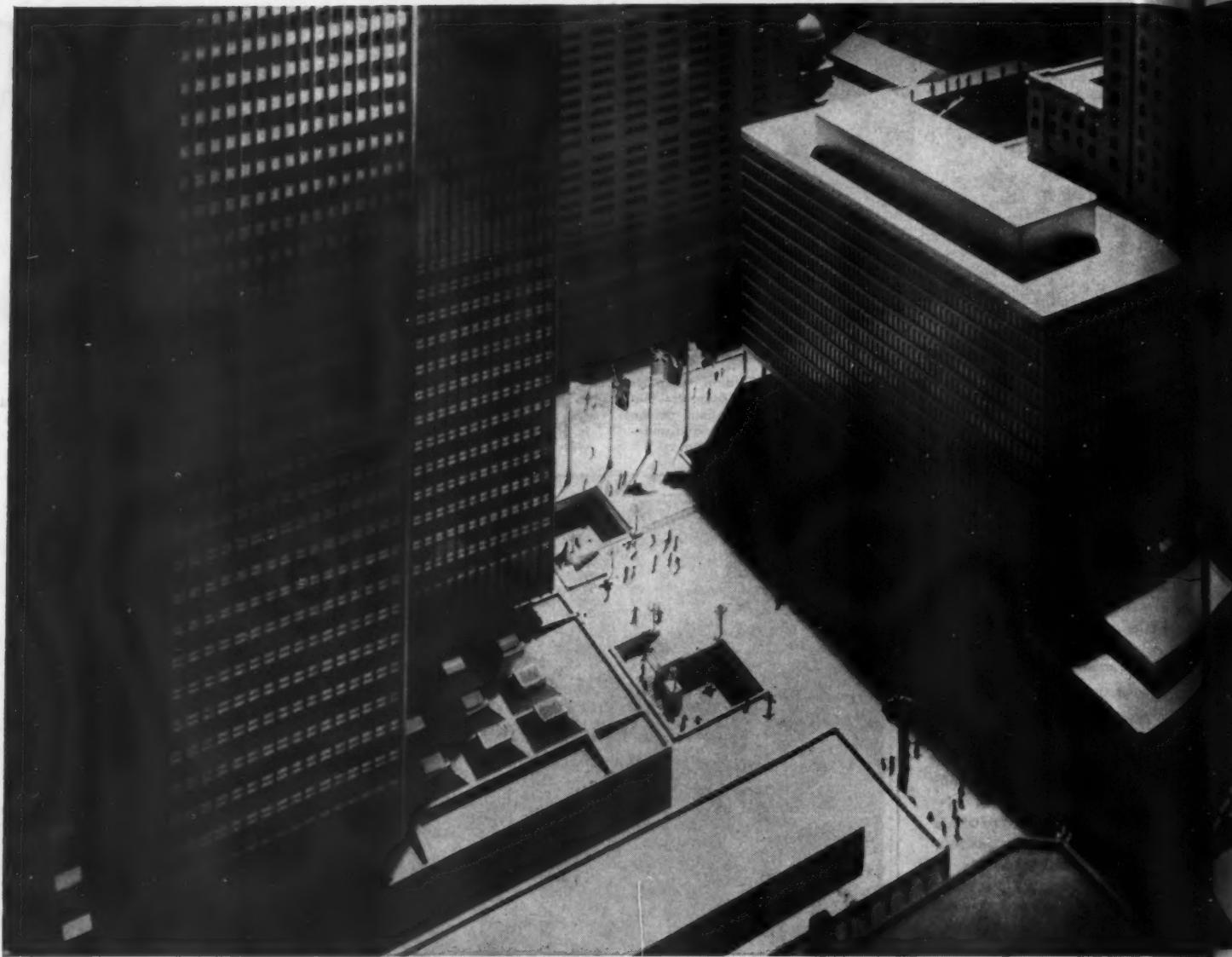
So, to keep your profits up . . . your operating costs down, power or repower your construction equipment with a dependable Ford Industrial Engine—available from 134 to 534 cubic inches, including two economical diesels.

**More power to you...**



**Ford**

INDUSTRIAL ENGINES  
AND POWER UNITS



## New heart for an old city

Chassis-jolting jobs . . . up-to-the-hubs in mud jobs . . . round-the-clock, big-yardage hauls without a break or breakdown—that's the assignment of the Mack trucks on Montreal's giant new complex of buildings known as the Place Ville Marie project. Planned as a worthy rival to New York's Rockefeller Center, this ambitious project will give the city an outstanding example of city-center development . . . and a full-scale test of trucks and equipment.

Wherever you see Macks at work, their power and dependability set the pace. For dumpers, mixers, or any heavy-duty hauling, you can't beat them for staying on the job. The only time out they need is for routine service and maintenance.

Mack dumpers—with rated capacities from 4 to 14 yards—are built for enduring performance. Mack-built Thermodyne® or stock diesel engines range from 170 hp to 450 hp and deliver maximum torque at low r.p.m. . . . famous Mack transmissions—five to twenty speeds—have ideally spaced ratios to give

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Your Mack branch or distributor will be glad to show you how to join the swing to Macks—the swing that means maximum hauling efficiency at minimum unit cost. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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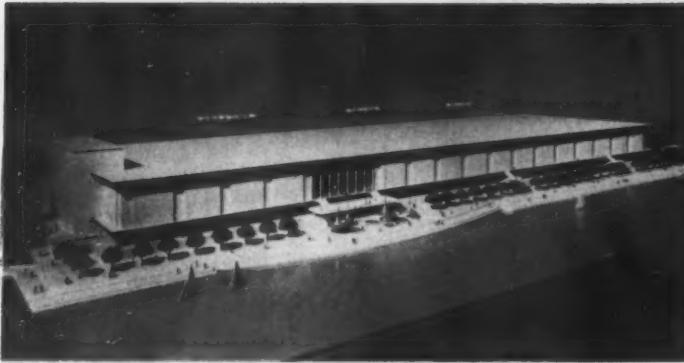
Over-all view of Place Ville Marie development in June, 1960. Mack mixers are handling the 72,000 yds. of concrete which will go into the 42-story central building.



Steep pit pull-outs are a test of transmissions. Mack-built transmissions stand up to heavy-duty hauling far longer and need less attention than others.



Hub-deep in water, mud, or sand, Mack's perform where other trucks often bog down—thanks to exclusive Mack Balanced Bogie with Power Divider that automatically transfers power to wheels with most traction.



This model of Chicago's lakeside Exposition Center shows how the building will look with 50-foot-high recessed sections and 45-foot-wide precast panels having an exposed white-quartz finish.

(Continued from page 47)

derricks reached over the side of the building to pick up the steel.

#### Falsework for truss erection

For the long 210-foot span between the steel columns, the steel erection often resembled a bridge job. Two falsework bents supported the steel during erection for each main span. Each bent was ingeniously made out of a 30-foot boom section. At the bottom of the section were crossed I-beams to distribute the load and to serve as guy-wire connections. At the top of the boom section, a hydraulic jack was mounted.

Steel arrived on the job in large truss sections. Four of these com-

prised a center span. One section made up each of the two 45-foot cantilever spans. Field connections were made with high-tensile bolts.

#### Sculptured wall panels

Unique precast panels form the exterior walls of the windowless exhibition area. In the 15-foot-wide, 50-foot-high recessed sections of the wall, the 4½-foot-high panels make an impressive sculptured design. The panels, formed from a full-size sand mold, were cast at the American-Marietta plant. The 6-inch-thick panels contain 1½ inches of Styrofoam insulation.

The 45 feet between the recessed sections of the wall is made up of precast panels with an exposed white-quartz finish. Both types of panels are held between the flanges of vertical steel members. The panels form the completed wall.

#### Who's who

The Exposition Center is being built for the Metropolitan Fair and Exposition Authority, whose chairman is David Mayer, Jr. Edward J. Lee is general manager.

For Gust K. Newberg Construction Co., John Hamrin is general superintendent and Jim Mulligan is assistant superintendent. Steel erection was kept running smoothly for American Bridge by superintendent "Blackie" Easter and field engineer Dick Ryabit.

Robert J. Cantrell is project engineer for Alfred Shaw, the chief architect on the project.

THE EN

#### Army Engineers develop glacier water system

The Sanitary Engineering Branch of the U. S. Army Engineer Research and Development Laboratories in Fort Belvoir, Va., has developed a water-supply system to satisfy the needs of men living on a glacier.

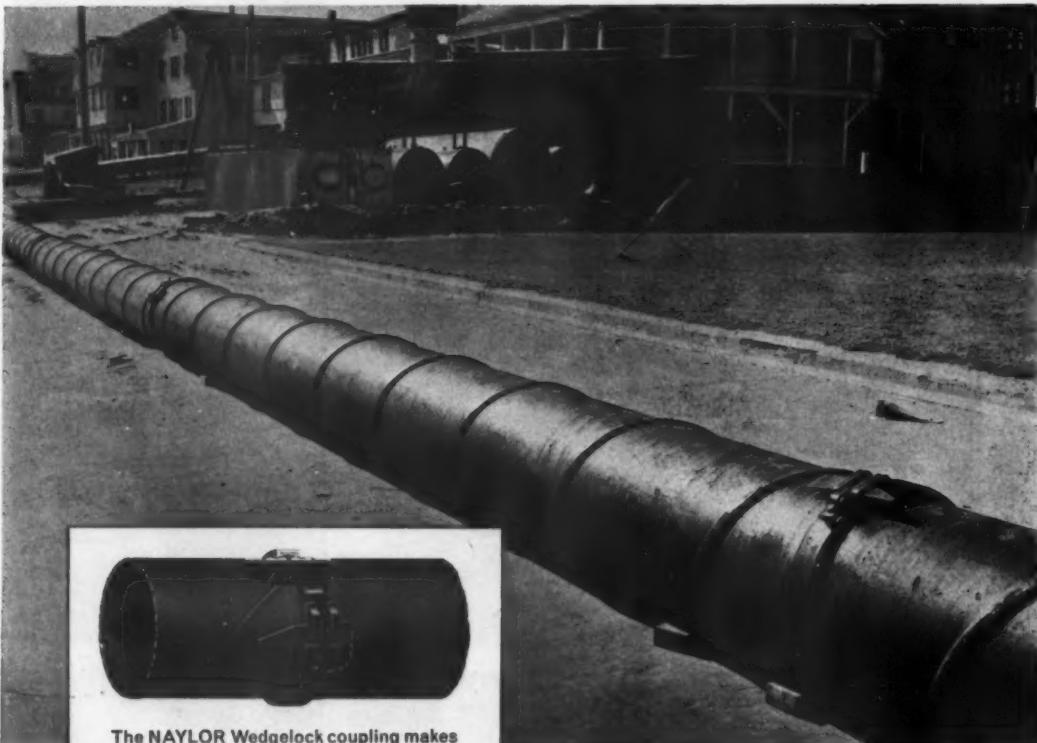
The system has been used successfully at the Army's Camp Century underground project in Greenland. It involves melting a hole, 3 to 4 feet in diameter, into the ice layers of the glacier. Eventually, a bell-shaped cavity is formed, and the water collects in a subsurface pond. A submersible-type well pump sends the water to the surface when it is needed. Steam generated at the surface is piped to a special drilling rig to make the first hole, and later to a melting-pump tool for water production in the ice cavity.

At Camp Century, a 42-inch-diameter hole was sunk 140 feet in about 30 hours of melting time. After nearly 300 hours of melting, a cavity about 40 feet in diameter and 50 feet deep was formed that supplied 110,000 gallons of water at the rate of 8,400 gallons per day. A man lowered 172 feet into the "well" found about 1,000 gallons of water, covered by a 2-inch layer of ice, which had been there since steam had been discontinued 6½ days before.

For more facts on insert, use Request Card at page 13 and circle No. 283

CONTRACTORS AND ENGINEERS

## Save TIME and WORK With This NAYLOR Two-Some



The NAYLOR Wedgelock coupling makes a positive connection, securely anchored in standard weight grooved ends.

When you combine NAYLOR Spiralweld pipe and Wedgelock couplings you have a team that can save you time and work in pipe lines for construction service.

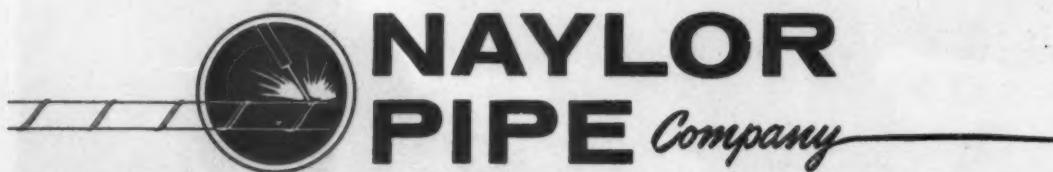
NAYLOR pipe is easier to handle and install because it is light in weight. And you get this light weight without sacrifice of

strength, due to the lockseamed-spiralwelded structure that makes this pipe distinctive.

NAYLOR Wedgelock couplings further contribute to savings by simplifying and speeding connections. A hammer is the only tool required to connect or disconnect them.

It will pay you to harness this pipe line team for your air, water and ventilating lines.

Write for Bulletin No. 59.



1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 283

!!HERE!!

GREATES SHOW ON WORTH !!!

CHEVROLET STURDI-BILT TRUCKS \*\*\*\*\*

\*\*\*\*\* JUST OUT!! JUST THE WAY YOU WANT 'EM!



THIS WAY  
TO THE TRUCKS

# **PROVED WORTH MORE BECAUSE THEY WORK MORE**

**1961 Chevrolet trucks roll in  
on a wave of owner acclaim!**

Sure enough, a gigantic advance in truck design has shortened every route in America. It began just a year ago, when the first Torsion-Spring Chevy nosed out onto a highway. With a vastly different truck design, featuring torsion-bar independent front suspension, this totally new Chevy was a big winner right from the start. Thanks to its amazing bump-cushioning ability, it did just about everything better. Got more work done in a day, for instance, with a floating ride that all but assured faster schedules on any roads. Slashed maintenance with a jolt-free ride that drastically reduced wear on truck components. Owner's earning power began to soar and word got around. This one caught on fast. So fast, in fact, that there are now, already, *nearly 300,000* Torsion-Spring Chevies putting out this new kind of working ability on tough jobs all over America. It's been a giant step forward in trucking and it's only the beginning. *Because, here for 1961, are Chevrolet trucks with even more of the worth-more, work-more performance that's won such wide owner acclaim over the past year.* Even more strength, even more stamina—and an even wider range of models. Look 'em over here—see how a Torsion-Spring Chevy can smooth out that rough hauling job of yours . . .







*1961 Chevrolet light-duty trucks*  
**MORE MODELS! ★★★★**  
**MORE WAYS TO SAVE!**

New worth-more pickups, panels, Suburban Carryalls, Step-Vans, forward controls and chassis-cabs ★ Work-proved Torsion-Spring Ride\* ★ 3 new go-anywhere 4-wheel drive models ★ Famous gas-saving Thriftmaster 6 ★ Tough, short-stroke Trademaster V8 ★ Roomy, rugged Comfort-King cabs ★ Spacious bodies that carry more cargo ★ Big, safe Torque-Action brakes ★ Brawny box-section frames, big-capacity axles!

\*All series except K10, K20, P20, P30.



*1961 Chevrolet medium-duty trucks*  
**MORE WORTH! ★★★★**  
**MORE WORKING ABILITY!**

88 big-saving models to choose from ★ Owner-acclaimed Torsion-Spring Ride ★ Big Comfort-King cabs ★ Sure-saving Jobmaster 6 power ★ Durable Taskmaster V8 power ★ Easy-wheeling Low-Cab-Forward models ★ Big-payload Chevrolet tilt cab trucks ★ Work-saving Powermatic transmission ★ Sturdy-built frames and axles!



*1961 Chevrolet heavy-duty trucks*  
**MORE MIGHT! ★★★★★**  
**MORE EARNING POWER!**

51 mountain-moving heavyweights ★ Choice of Conventional, tilt or Low Cab Forward models ★ Tough Torsion-Spring Ride ★ Best-built big-tonnage V8's going ★ G.V.W.'s up to 36,000 lbs., G.C.W.'s up to 51,000 lbs. ★ Massive K- and X-braced frames ★ Advanced Eaton-Hendrickson tandem units ★ Rugged rear axles up to 18,500 lbs. in capacity ★ High-capacity variable-rate rear springs!



-duty trucks

★★★

**ABILITY!**

models to  
Owner-  
n-Spring  
ort-King  
ng Job-  
Durable  
★ Easy-  
Forward  
ad Chev-  
★ Work-  
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special wire-winding machine designed by The Preload Co., New York City, winds prestressing wire around the base of a reinforced-concrete structure forming part of a missile complex at Lowry Air Force Base, Denver. Some 1,600 tons of prestressing wire was used in stressing footings for powerhouses and control centers at the Air Force base.



### Prestressed footings counteract loading, blast force for powerhouses and control centers at missile base

■ Prestressing of the circular footings of 12 igloo-shaped powerhouses and control centers at the Titan missile base at Lowry Air Force Base, Denver, will counteract the stresses induced by normal loading and nuclear blasts.

The power facilities are housed in hemispherical shells of reinforced concrete with reinforcing steel anchored in the footings. This steel, together with footing keyways, transfers stresses to the circular footings. The stresses are counteracted by high-tensile wire, wound under tension of 150,000 psi around the circumferences

of the footings after the structures were completed.

Twenty-five layers of wire, each layer containing 98 wires, were applied. As each was placed, it was covered with pneumatic mortar, and a final thickness of  $\frac{1}{2}$ -inch-thick mortar was applied to the completed job. For the control centers, only eleven layers of wire were needed.

Two wire-winding machines, designed especially for the job, were used by The Preload Co., Inc., New York, N. Y., which did the prestressing. Each machine had a pair of wheels that ran along the top of the footing and another set to run along the outside face. The upper portion of the machine was guyed to a circumferential wire secured to the structure part way up from the base.

The machine propelled itself by driving a rotating member that meshed with a circumferential chain secured at the base of the structure. As the machine traveled around the footing, the prestressing wire was drawn through a die from a diameter of 0.192 inch to 0.172 inch to apply the required tension.

#### Case history

### Steel forms answer winter concrete problem

On a naval radio transmitter project at Cutler, Maine, the Franchi Construction Co., Inc., of West Newton, Mass., encountered a region where winds frequently reached 90 to 100 mph and temperature readings of 30 to 35 below zero were routine. When the work began last February, the firm faced a tight 8-month completion schedule with heavy penalty clauses.

According to the company, one of the most crucial phases of the job was placing concrete. Logistics of the job made it practically impossible to build concrete forms on the site because of the cold weather, the small work area, and a serious supply problem.

It was decided to use Symons Steel-Ply forms.

The Franchi crew was able to gang-form all of the caissons for the transmitter and other buildings. Regular Symons forms were tied together 4 feet square and up to 32 feet in length. The gang forms were easily lowered into position and moved by crane.

According to Franchi superintendent James Ivey, the high winds in the area frequently cracked the  $2 \times 4$  bracings, but the forms—laced together with Symons ties and other hardware—never broke loose. Ivey reports that his firm used 13,000 square feet of forms in the placement of some 6,000 cubic yards of concrete during the worst part of the winter, and that the crew missed only one day of work.

For further information write to Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 102.

# MORE MIGHT! MORE MODELS! MORE WAYS TO SAVE! NEW CHEVROLET TRUCKS FOR '61!

They're worth more than ever before because they'll work more than ever before! Here's Chevy for '61 with a longer line of models, extra strength and stamina . . . even more of the smooth, tough performance that's won high praise from truckers all over America!

**PICK FROM 189 MODELS!** More models than ever before—work-proved dollar savers in every weight class! 1961 Chevys for every hauling chore in the book include three new long-wheelbase 4-wheel-drive models, sturdy Step-Side and Fleet-Side pickups, spacious panels, versatile Suburban Carryalls, handy Step-Vans and forward controls, tough chassis-cabs of all sizes, mountain-moving tandems. Somewhere in this long, long line you're sure to find the one truck that makes the most sense on your job!

**OWNER-PROVED TORSION-SPRING RIDE!** It puts an end to I-beam axle shimmy! Independently suspended front wheels step right over bumps, tough torsion bar springs soak up jolts. New smoothness improves virtually every phase of performance; speeds up schedules, cuts truck wear and maintenance expense, reduces cargo damage and driver fatigue! Owners report that there's never been anything like it for high-profit hauling—and it's standard on every 1961 Chevrolet model, except Forward Controls and 4-wheel drives!

**STRONG, ROOMY CABS THAT HELP BOOST YOUR WORK OUTPUT!** Rangy drivers ride in comfort with stretch-out room in all directions. Extra hip room, shoulder room, leg room and head room. Seeing is safe and easy through a whopping-big wrap-around windshield. The seat's a beauty, too—a full  $59\frac{1}{2}$ " wide with a spring combination inside that gives just the right support. (And for the last word in working comfort, special 6" foam rubber padding is optional at extra cost.) And these

cabs are rugged, with a build that includes all-steel construction, double-panel roof, double-walled cowl housing and box-section door pillars.

**TOUGH TRUCK CHASSIS—BRAWNY BASIS FOR BIGGER PROFITS.** The best sellers have never been huskier, starting with the massive, truck-built frames that add stamina to every chassis. In medium- and heavy-duty models, rugged self-adjusting variable-rate rear springs help smooth out big-tonnage hauls. Quality features galore boost truck life in every Chevrolet truck for '61. Extra-big brakes give faster, surer stops and last longer. Precision wheel balance makes steering easier, lengthens tire life. Smooth, durable Synchro-Mesh transmissions come in sizes to suit all types of duty.

**ENGINES WITH PROVED EARNING POWER.** Famous sixes that out-sell all others because they're best at brightening cost records . . . big V8's that lead the industry for short-stroke design and hard-working durability! Chevy for '61 offers a long line of power plants to meet the special needs of every weight class. They're money-making specialists, designed to hammer down high costs in tough truck duty.

The truth is, we could fill every page in this magazine with reasons why Chevrolet trucks have never been better than they are for '61, but there's no need for that. Not when your Chevrolet dealer can boil it all down for you so quickly and pleasantly. See him soon and start saving soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Member of the ATA Foundation, Inc., American Trucking Industry

## 1961 CHEVROLET STURDI-BILT TRUCKS



Winter care of equipment  
demands special attention in

## Five maintenance areas

Extra maintenance and storage care is needed by equipment during winter. Special consideration should be given to five areas—lubrication and the cooling, starting, fuel, and electrical systems.

Lubrication is very important in cold weather. Lighter-weight oils must be used and, when the temperature is below freezing, the engine crankcases should be filled with SAE No. 10 crankcase oils. Lower-viscosity oil

allows for easier cranking of the engine and is fluid enough to circulate freely during the warm-up period.

In extreme cold, or in a climate where very low temperatures prevail, the oil may have to be diluted with kerosene to give it enough viscosity. But when the air gets a little warmer, this oil should be drained and replaced with undiluted oil, as too-thin oil will not lubricate properly in higher temperatures.

A lighter lubricant must also be used for bearings in cold weather. No. 1 or No. 0 is usually the most successful.

Below freezing, a grade of at least No. 80 transmission oil is recommended. This too may have to be thinned with kerosene during very cold weather and changed again when warmer temperatures return.

On the track and carrier rollers, it is usually necessary to switch to

lighter grades of lubricants during sub-zero weather, except for lifetime lubricated rollers or idlers, filled in the factory with a low-viscosity lubricant, that do not need refilling. It may sometimes be necessary to use oil instead of grease on track and carrier rollers. The ability of the standard grease gun to handle the grease outdoors is a good guide to the time to change to a lighter grade or to switch to a crankcase or transmission-type lube oil.

Machines with gasoline-starting engines usually start well in cold weather if both the gasoline and diesel engines are in good shape and the lubricants up to par for cold weather.

However, diesel engines with electric or air-starting systems are sometimes difficult to get going without additional help when temperatures are below 50 degrees F. Extra external heat is needed, such as that supplied by a manifold air heater. In extreme cases, such as Arctic conditions, the crankcase may have to be heated with a torch or some other form of high heat.

With diesel engines, it is best to use permanent-type antifreeze solution because of their higher operating temperatures. It is risky to use plain water as a coolant, draining the block and radiator at the end of each day, because failure to drain out the water just one time can result in expensive damage to the engine.

Water can also cause trouble in the fuel system. The best way to keep it out is to prevent condensation inside the fuel tank. Filling the tank completely at the end of the workday will do this, since it pushes out the moisture-laden air. Much of the water that still gets into the system can be gotten rid of by draining off a small amount of fuel each morning. During cold weather, the fuel filter housing should be drained at short, regular intervals to prevent accumulated water from freezing.

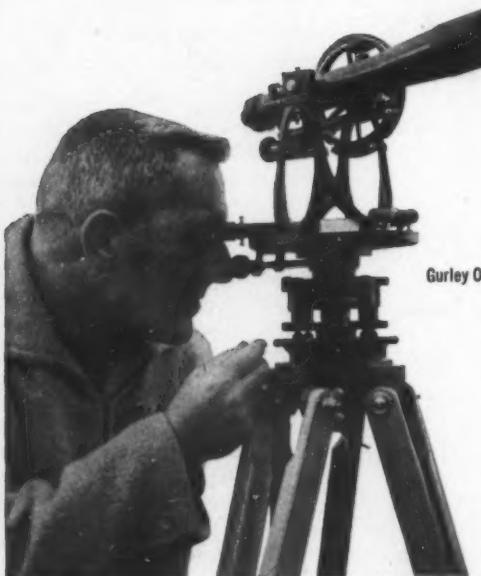
In sub-zero weather, a fuel with an unusually low pour point should be used to insure the proper flow of fuel from the tank to the fuel transfer pump. This is often called "winter grade" fuel and is available in most cold areas.

The entire electrical system of a piece of equipment should be checked before winter sets in, especially the starting engine magneto. On units with direct electric starting only, the battery should be given particular attention. The battery should be tested frequently and charged whenever the charge drops below standard in order to insure sufficient power for starting. A discharged battery should never be exposed to freezing temperatures, as the electrolyte can easily freeze and cause the battery case to break.

It is important that a battery be strong in cold weather, as its "crank-



### Built-in optical plummets eliminate plumb bobs save set-up time...improve accuracy



Gurley OP-57



Gurley OP-137

The Gurley Optical Plummet Transit (Model OP-57) has proved itself to be such an important time and money saver in the field that this optical plummet feature has also been added to the Model 132 Standard Precise Transit. The new transit will be known as the OP-137.

Both these Optical Plummet Transits will save you time and trouble in setting over a point. The OP-57 and OP-137 eliminate the swing and sway of the cord and plummet—exasperating and time consuming. You will especially appreciate the increased accuracy on windy locations.

By rotating the instrument 180°, you can be assured of positive centering.

The Gurley Optical Plummet Transits are furnished with tripods which have built-in shifting heads. They allow a two-inch shift of instrument over the point, providing greater latitude in initial set-up.

Model OP-57 is recommended for very exacting work; the OP-137 for general engineering and construction work because of its shorter telescope, smaller size and its lighter weight.

Now in two models Gurley offers you an important advantage of the optical-reading theodolite plus the simplicity, ruggedness and proved performance of the American transit. Write for new Bulletin OP-100.

W. & L. E. Gurley, Engineering Instruments Division  
Fulton & Station Streets, Troy, New York

Please send new bulletin OP-100 with details on Gurley's Optical Plummet Transits.

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**W. & L. E. Gurley**

Engineering Instruments Division

Since 1845



For more facts, use coupon or Request Card at page 18 and circle No. 285

## WINTER WORK

"ability" drops quickly in low temperatures while at the same time the "drag" or inherent engine resistance increases rapidly. In effect, the battery has less energy to do a more difficult job.

Care must be given to oil-bath-type air cleaners in cold weather. The oil in the air cleaner cup may have to be changed to SAE 10 weight in order to be carried up into the screens; if it does not reach and coat them, the efficiency of the cleaner drops greatly.

When equipment is operated in blowing snow, the air cleaner should be checked frequently, since the cleaner or its inlet may be plugged quickly.

Dry-type air cleaners need no special winter care other than frequent checks against plugged inlets.

The most important phase of preparing equipment for winter storage is to read the operator's handbook for each machine. The greatest danger to guard against is rust—internal and external.

Equipment to be stored should first be completely lubricated and washed, and exposed metal surfaces should be spot-painted. A light coating of grease will protect bulldozer blades, cutting edges, moldboards, and other external surfaces from rust and corrosion.

The cooling system should be filled with a permanent antifreeze solution containing a rust inhibitor. If an engine is to be stored with a drained cooling system, a soluble oil-type rust inhibitor should be added to the coolant during the last week the machine is in operation. This spreads a film of oil throughout the inner surfaces of the cooling system, providing a coating against rust.

Crankcases, transmission cases, and final drives should be cleaned, flushed, and refilled with new oil before machines are stored for the winter.

If possible, a machine should be started once each week and the engine allowed to run for several minutes. For this reason, it is best to store units with permanent-type antifreeze so that special preparations will not be required to turn over the engine.

With stored track-type tractors, it is good to run the machine forward and backward several times in order to redistribute the oil in the transmission and final drives, recoating all interior parts.

When it is not possible to operate the engine or machine once a week, it is advisable to add a cupful of oil in the top of each cylinder; a lesser amount can be used for small units.

Rubber-tire units should be blocked up or at least maintained with proper pressure in the tires during storage.

All care given to equipment before and during winter can be regarded as an investment that will pay off when the season breaks and the rigs stand ready to roll.

THE END



A Cat grader works through the night, clearing snow from streets. Dependable operation of rigs in cold weather can be assured with extra attention to lubrication and fuel, electrical, cooling, and starting systems during the winter.

## REBUILDS TRACKS WITH VICTOR REBUILDER



for 1/3 the cost of new ones...



Victor DEMS roller and idler rebuilder mounts 8 rollers, advances from one roller to next between passes, thus preventing excessive heat build-up.

Victor TLM-2 track link rebuilder automatically hardfaces both sides of track simultaneously.

"New rails for a TD-24 cost about \$2200.00, but with our Victor track link rebuilder we can recondition a worn set to 90% as good as new for \$750.00," reports Allied Equipment Company, International Harvester dealer, Fresno, Calif. Speed helps to make these savings possible. "With our Victor, one man can rebuild a TD-14 track in 6 hours, floor-to-floor time—that's 5 times faster than non-automatic equipment."

Allied Equipment Company also uses Victor roller and idler rebuilder, roller and idler grinder, and flux grinder—all manu-

factured by L & B Welding Equipment, Inc., a wholly-owned Victor subsidiary, and sold only under the Victor name.

### INVESTIGATE VICTOR TRACK REBUILDING NOW

Whether you're a dealer or contractor, you can profit from Victor automatic rebuilding machines—and Victor continuous-coil, hardfacing wire, developed expressly for use with automatic rebuilders. For complete details, call your Victor welding dealer, or write us today for descriptive literature.

### VICTOR EQUIPMENT COMPANY

844 Folsom St., San Francisco 7 • 3821 Santa Fe Ave., Los Angeles 58

1145 E. 76th St., Chicago 19

J. C. Manzies & Co., Wholly-Owned Subsidiary

718

MFRS. OF HIGH PRESSURE AND LARGE VOLUME GAS REGULATORS; WELDING & CUTTING EQUIPMENT; HARDFACING RODS; BLASTING NOZZLES; COBALT & TUNGSTEN CASTINGS; STRAIGHT-LINE AND SHAPE CUTTING MACHINES; ROLLER AND IDLER REBUILDING MACHINES



The power-line poles to the left of the photo indicate the approximate position of the highway. The L-W Tournatractor is shown piling up the snow on the fence to the right. In the second pass, the tractor-plow pushed up snow on the opposite side of the fence.

#### Case history

##### Wisconsin snow job— snow fence built of snow

After a 12-inch snow fall in Dane County, Wis., County Highway Department crews cleared the roads for traffic, but were confronted with the problem of drifting. The snow had drifted so extensively that most snow fences (4½ feet high) were almost totally covered. Crews realized that, should another snowstorm occur in the area, the fence would be completely ineffective to hold back any drifting.

As a precautionary measure, Dane County officials conceived the idea of building a snow fence—using the snow itself. A LeTourneau-Westinghouse Model C Tournatractor with snowplow was used to push up a ridge of snow on both sides of the slat-type snow fence, several feet higher than the fence itself. These snow barriers became high enough to prevent the danger of any further drifting.

In fields where snow fences did not exist, the Tournatractor snowplow performed the same operation, plowing the length of the field in two directions to pile up the snow from both sides in a high ridge.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 81.

##### HRB reports tests on snow, ice control

A chemical-mixture test program in snow and ice control is the subject of a report in Highway Research Board Bulletin 252, "Snow and Ice Control with Chemicals and Abrasives." Results and cost advantages realized on experimental tests of calcium chloride with rock salt and with abrasives on the New York Thruway are described.

A second report in the bulletin, on the use of chemicals and abrasives in snow and ice removal from highways, gives results of laboratory tests to determine the effectiveness of various mixtures as melting agents.

The bulletin, priced at 80 cents per copy, may be obtained from the HRB, 2101 Constitution Ave., Washington 25, D. C.

##### New York charges fee for special hauling permits

Since September 1, the New York State Department of Public Works has been charging a fee of \$5 for special hauling permits, necessary to move oversize and overweight vehicles over state highways. During 1959, some 46,676 of these permits were issued, and processing them was a considerable expense.

The special permits are required for vehicles that exceed the limitations outlined in the State Vehicle and Traffic Law. Usually a permit is needed for a vehicle more than 8 feet wide, 13 feet high, or 35, 40, or 50 feet in length, depending on its type. Gross-weight limits vary according to

the type of vehicle.

A permit is needed for each trip made by each vehicle. However, contractors' vehicles within the limits of a state highway construction project are exempted. Monthly permits are granted for the movement of contractors' vehicles within a 25-mile radius of the project, and a blanket permit, at \$5 per vehicle, is available to holders of the monthly permits.

The purpose of the permit system is to limit public safety hazards and to protect the highways from damage. Holders of permits are required to provide satisfactory insurance coverage to protect the state against loss.

TUNNEL	LOCATION	LENGTH IN FT.	BORE
Bingham Tunnel #5490	Utah	17,951	20' x 25'
Flaming Gorge Tunnels	Utah	1,100	20' x 25'
Salt Lake By-pass	Utah	8,000	8' x 8'
Columbia Tunnel	Utah	8,500	7' x 14'
79th St. Chicago Tunnel	Illinois	24,400	19'
Washington, D.C. Tunnel	District of Columbia	6,800	17'
Eucumbene-Tumut	Australia	36,916	24'
Diversion Tunnel	Australia	3,538	18' x 20'
Murrumbidgee-Eucumbene	Australia	53,800	11.3'
Cumbaya Hydro-Electric Project	Ecuador	27,800	12'
Teoma-Tumut	Australia	49,520	12.5'
Hanabanilla Tunnel	Cuba	22,000	14.1'
Glen Canyon—Diversion	Arizona	2,900	46'
Access	Arizona	12,000	23'
Spillway	Arizona	2,200	50'
Cable Control	Arizona	1,300	7'
Fremont Canyon	Wyoming	22,000	19'
Vasquez Tunnel	Colorado	16,000	7'
Quandary Tunnel	Colorado	6,000	6' x 8'
McCullough Tunnel	Colorado	6,500	6' x 8'
Rampart Range Tunnel	Colorado	4,200	8' x 9'
Silver Falls Hydro-Electric Project	Ontario	10,400	17'
SAGE Tunnels	Ontario	7,000	10' x 10'
Quebec Cartier Railway	Quebec	5,000	18' x 22'
Montreal Sewer Tunnels	Quebec	15,000	9'
Bridge River Hydro-Electric Project	British Columbia	13,000	18'
Cooper Lake Hydro-Electric Project	Alaska	4,600	12'
Blue Lake Hydro-Electric Project	Alaska	9,000	12'
Vancouver PO Project	British Columbia	2,200	8'
Navajo Dam	New Mexico	3,200	18'6"

## On these 81 tunnels...the rock!

B&O Railway	West Virginia	581	25'
Foothills Parkway Vehicular	North Carolina	840	32'
Smith Dam Diversion	Alabama	1,946	26'
Flannagan Diversion	West Virginia	780	21'
Blue Ridge Vehicular	North Carolina	900	32'
Canyon-Ferry Tunnel	Montana	12,000	7'
Luray Vehicular	Virginia	1,000	32'
Kettle Creek Diversion	Pennsylvania	900	19'
Allegheny Sewer Authority	Pennsylvania	5,500	8'
		52,000	8' to 14'

**1,112,735 FEET**

**Total length of tunnels: 1,112,735 FEET**  
**Period covered: Tunnels completed or in progress during**  
**the past five years ONLY.**



**Case history:** Installing pipe in trenches 10 to 24 feet deep and 40 to 45 inches wide with a Lorain Model 56 backhoe, Erie, Pa., contractor C. L. Herman reports that he worked right through last winter, digging through more than 30 inches of frost and street pavements. Herman is one of a dozen contractors on the \$4 million sanitary-sewer project in Millcreek Township, near Erie. For further information write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 80.

#### Case history

#### Solve starting problem with electric preheater

A Kim Hotstart installation on the diesel engine of a Euclid S-18 scraper equipped with torque converter solved cold-weather starting problems for the Crick & Sons Construction Co. at the Wanapum Dam project in Vantage, Wash.

According to the company, the electric preheater installation proved to be a profitable investment because it not only facilitates instant starts in cold weather with existing batteries on equipment with torque converters, but also because it enables the equipment to operate at immediate peak performance. The engine is kept warm at all times, eliminating run-down batteries caused by slow, cold engine starts.

The Kim Hotstart plugs into an electric circuit. It draws off cold water from the engine and heats and circulates it through the engine.

For further information write to the Kim Hotstart Mfg. Co., Dept. C&E, W. 917 Broadway Ave., Spokane 1, Wash., or use the Request Card that is bound in at page 18 of this issue. Circle No. 95.

#### B-L-H consolidates its Lima and Madsen plants

The Construction Equipment Division of Baldwin-Lima-Hamilton, Lima, Ohio, has transferred all manufacturing operations from its Madsen Works in La Mirada, Calif., to the Lima Works as part of a program to consolidate plant facilities.

A Lima-Madsen engineering staff, sales office, and service-parts department are being combined with Lima's present office at 14120 E. Rosecrans Ave. in La Mirada. Their services will be available for Lima excavating and crane equipment, Lima Roadpackers, Lima Austin-Western crushing, screening, and washing plants, and Lima-Madsen asphalt equipment.

#### Link-Belt names licensee

Link-Belt Co., Chicago, has licensed the firm of Orenstein & Koppel of Milan, Italy, to manufacture and sell its power shovels and cranes in that country, and to sell them in other Common Market countries through Link-Belt, S. A., of Geneva, Switzerland. The Italian firm makes a wide range of excavating and construction machinery.

TUNNEL	LOCATION	LENGTH IN FT.	BORE
Neonack Tunnel	Washington	8,800	7' x 8'
Avamore Water Tunnel	Ohio	3,000	14'
West Delaware Aqueduct	New York	227,040	14'
Newtown Creek Tunnel	New York	8,045	11'6"
Worcester Diversion Tunnel	Massachusetts	4,800	19'
Western Pacific Tunnels #4 & 5	California	12,800	22' x 28'
Clear Creek Tunnel	California	57,030	17'6"
Lafayette Tunnel	California	15,840	9'6"
Cherry Valley Power Tunnel	California	29,400	12'6"
Eleanor-Cherry Tunnel	California	6,400	11'
Mammoth Pool Tunnel	California	42,240	21'
Haas Tunnel	California	32,800	13'
Jaybird Tunnel	California	23,300	15'
Camino Tunnel	California	27,220	13'1/2"
Western Pacific Railway #2 & 3	California	5,600	22' x 28'
Mammoth Pool Diversion Tunnel	California	1,300	28'
Wishon Diversion Tunnel	California	1,400	15'
Pee Tunnel	California	36,960	19' x 27'
Trinity Dam Diversion Tunnel	California	2,800	34'
Western Pacific Railway Tunnel	California	3,000	22' x 28'
Caribou Power Tunnel	California	9,240	12'
Butt Valley Power Tunnel	California	10,560	13'
Dez Dam—Diversion Tunnel	Iran	2,160	50'
Access Tunnel	Iran	10,820	21' x 18'
Glendale Tunnel	California	18,000	17'
Green Springs Tunnel	Washington	2,100	6'
Cascade Tunnel	Washington	4,800	6'
Pacific Power & Light—Diversion Tunnel	Washington	3,000	32'
Power Tunnel	Washington	1,575	25'
Penstock Tunnels	Washington	1,950	13'

## roills are all Gardner-Denver

Faraday Tunnel	Washington	2,463	23'
Felton Dam Tunnel	Washington	600	20'
Coregan Dam—Diversion	Washington	1,800	18'
Outlet & Penstock	Washington	2,070	15'
Hills Creek Dam Tunnels	Washington	1,600	18' x 10'
Main Relief Sewer Philadelphia	Pennsylvania	4,200	16'
Bull Run Dam	Oregon	{ 1,200 1,000	9' 18'
Chicago Water Tunnel	Illinois	{ 2,250 1,400	16' stub 20' stub
Costile Falls Tunnel	Washington	900	12'

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

**GARDNER - DENVER**

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 287



# Plastic-covered panels for a winter enclosure



Contractors and Engineers staff article

Careful handling and storage of prefabricated, Visqueen-covered protective panels cut down on damage and made many re-uses possible on construction of the new women's dormitory building at Westminster College in Salt Lake City.

Although the structure was designed by architect Donald H. Panushka for tilt-up construction, the contractor, Jacobsen Construction Co., Salt Lake City, cast it in place. Ganged Uni-Form panels, Acrow adjustable steel shores, and a new Universal-Liebherr Model 56-72 tower crane were key factors in keeping the cast-in-place costs in line with tilt-up estimates.

The half-million-dollar contract provided for the construction of the 3-story dormitory and an adjoining single-story cafeteria and dining room. The dining hall is a single-story building with cast-in-place basement walls and first-floor slab and a steel-framed superstructure.

The 180 x 40-foot dormitory has 21 units per floor, each of which will house two students. Founded on spread footings on a gravel foundation, the structure is of cellular construction. The 7-inch-thick transverse partition walls all serve as beams to support the floor and roof slabs, which are continuous across four or more spans. The floor slabs range from 4 to 10½ inches thick and span 12 feet in most cases.

The beam-walls are the full height of each floor. When they were formed, a tapered wood strip was placed on the slab at the bottom of the wall but not at the ends. After the forms had been removed, the strips were knocked out. This left the walls supported only at the ends, permitting them to act as beams in supporting the floor above.

#### Use ganged forms

Since most of the wall and floor panels were of similar sizes, the contractor assembled Uni-Form panels into units of convenient size. These ganged forms were moved intact from one floor to the next as the work proceeded. The workmen stripped the panels, and the tower crane delivered them to the next section being formed.

Ganged panels for the floor and roof forms were supported on timber

One side of the women's dormitory building at Westminster College, Salt Lake City, is closed in with Visqueen 4-mil panels on 1 x 4 frames while concrete work is in progress. Light enough for two men to handle, the panels are set the day before concrete placement starts so that the area can be heated by butane-burning salamanders. Ganged Uni-Form panels on Acrow shores are used to form the roof of the building.



#### sinkers



**CP-69 Sinker Drill.**  
This new, fast drilling, heavy-duty 55-pound class

Sinker has "Beavertail" retainer for extra durability. All-purpose backhead permits Blower Dry, Wet and Air-Water operation. Air consumption and maintenance are low.

#### airlegs



**Attachable or Integral Airleg Mountings**  
set up fast! Give high drilling efficiency with hard-hitting CP Sinkers and tungsten-carbide bits. Closely held feed pressures insure full bit contact for maximum footage. Single or double telescopic feed available.

#### demos



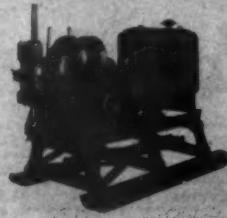
The streamlined CP-124 Demo is the newest in a line of smooth-handling demolition tools. Has shock-proof latch-type retainer and 4-blade backhead. This all-new 80-lb. class demo packs more smashing power per pound than any other demo on the market.

#### core drills

**CP post-mounted Core Drills** cut costs for: blastholing, foundation sampling, grout-holing, weep holes. The new CP-65 Diamond Drill — world's fastest — delivers 20% more power than its predecessor, the world-famous CP-55. Capacity: 600 feet with EX Fittings.

Versatile skid-mounted Core Drills may also be truck mounted. Gasoline, diesel, air or electric drive. Capacity to 2,250 feet with EX Fittings.

Skid-mounted Core Drill



wherever there's a **ROCK PROBLEM**  
there's a **CP ROCK DRILL**  
**TO LICK IT!**



Universal-Liebherr crane hoists Gar-Bro 3/4-yard concrete bucket from the roof of the structure. The electrically powered crane handled not only concrete but also forms and shoring; it moved ganged forms intact from floor to floor as work progressed.



For this 3-story structure, the tower crane was used at a height of 70 feet. Canvas covers the roof-slab concrete while heat from salamanders maintains satisfactory temperatures for a 3-day curing period.



The slewing crane uses about 60 feet of track to get around the corner for work on the dining-hall structure. The track section includes a 90-degree turn, and the inside track has a 21-foot radius on this turn. This was the first time one of these cranes worked on a job in Salt Lake City.

## REICHdrills

**6-900 Tracdrill for 4" and 4 1/2" Deep-Hole Drills**  
The only rig that can drill at right angles to tracks on either side... a full 180° swing. Drills extra-low snake holes or hard, high horizontals 11 feet overhead. Extra long tracks and knee action increase pulling power and stability. Automatic brakes and "dead man" trammings insure operator safety. Dual operating controls at boom end and turret save steps, increase throttle time.



## REICHdrills

All-hydraulic top-drive rotaries can be truck, crawler or tractor mounted. Every feature is designed for easy, one-man operation... simplicity of controls... absolute control of rotary speed and feed pressures... quick moves... easy set-ups. Hole sizes to 16"; down pressures to 90,000 lbs. You get more from your rotary when it's a REICHdrill.



You'll find project-proved CP ROCK DRILLS setting footage records in every kind of formation. For EXPLORATION to see what you're up against... for BLAST HOLE DRILLING under any conceivable condition... for SECONDARY BREAKING or DEMOLITION - your quickest

way to lick the problem is to start with the right equipment and the *right equipment* is CP.

To get up-to-date information on any specific Rock Drill shown here, write for the latest bulletin to: *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N.Y.*



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COMPRESSORS • PNEUMATIC AND ELECTRIC TOOLS • AIR-BLAST BITS • DIAMOND DRILLS • REICHdrills • ROCK DRILLS

For more facts, use Request Card at page 18 and circle No. 288

OCTOBER, 1960

joists shored with Acrow shores.

Four of the transverse walls and a third of the floor slab for one story were formed and poured as a unit. The roof was placed in two pours.

### Winter protection

A substantial part of the concrete work was done during the winter months when temperatures ranged well below freezing.

To protect the concrete during the cold weather, Jacobsen used a Visqueen enclosure and gas-burning salamanders. It was necessary to enclose only the area where concrete was being placed, and even this area needed protection for only about a week. The protective covering was made up in removable panels that just fitted between the floors. When not in use, the panels were carefully removed and stored where they would not be damaged by wind or falling objects.

The panels were made up of 1 x 4 wood framing covered with Visqueen 4-mil polyethylene film. They were light enough to be handled by two workmen, and they could be stored in one of the rooms of the structure when not in use.

When a section had been formed, the panels were set up to enclose the area below the slab to be cast. The salamanders were started in the enclosed area the day before concrete placement to make sure forms and steel were warmed up and to melt any accumulated snow or ice. As soon as the concrete was cast, the slab was covered with tarpaulins and the heat was kept on for three days to cure the high-early-strength concrete.

### Crane handles concrete

The Universal-Liebherr tower crane, in addition to handling the forms and shoring, bucketed all of the concrete from the transit mixers directly to the forms. Using Gar-Bro 3/4-yard concrete buckets, the long boom of the crane was able to reach every part of the structure; it was never necessary to handle concrete in buggies.

The crane, new on this job, was the first tower slewing crane to make its appearance in Salt Lake City. It has a telescoping tower that extends up as much as 130 feet from the ground to the base of the boom, but



While tower-crane operation was quiet enough to make voice signals sufficient for the operator, a 2-way Motorola walkie-talkie radio was sometimes used to overcome other job noises. Super Bob Loder is talking to the crane operator. Note partition walls serving as beams for slab floors.

(Continued from preceding page)

on this job a height of only 70 feet was used. The 108-foot boom used could handle a load of 3,740 pounds at the 108-foot radius. An automatic brake on the machine prevents lifting of a load that would overload the machine.

The crane was mounted on about 60 feet of track, including a 90-degree turn. The inside track had a 21-foot radius on this turn. The track gage is 15 feet. Actually, there was little necessity for moving the crane on the rails except to get around the corner of the dining-hall structure.

Jacobsen found that one of the big advantages of the tower crane was its ability to work high in the air out of a limited ground space. Another advantage was the quiet electric operation. The operator, working from the cab up on the tower, could converse in normal tones with the workmen on the structure. The need for hand signals was eliminated. But at times, when remote signals were required, a Motorola walkie-talkie radio was used.

In spite of its high tower and long reach, the crane erects and dismantles itself without the assistance of another machine. It folds down to a unit 8 feet wide and 133.5 feet long, and it loads itself on a truck and dollies for transportation to the next job. This crane was purchased from the Contractors' Equipment & Supply Co., Salt Lake City. "Conesco" is the distributor for Universal-Liebherr for Utah, Idaho, and a part of Wyoming.

Superintendent of the job for Jacobsen Construction Co. was R. C. "Bob" Loder. **THE END**

#### AGC, NBCA form new cooperative committee

A joint cooperative committee has been formed by the National Bituminous Concrete Association and the Associated General Contractors of America. Both associations have national headquarters in Washington, D. C.

The group is headed by D. J. O'Connell, AGC cochairman, and J. A. Woodworth, NBCA cochairman. J. M. Sprouse is AGC cosecretary, and Keith Griffith, NBCA cosecretary.

#### Winter bridge curing with electric cables

Electric-resistance heating as a method of curing concrete bridge decks in winter was used successfully by the Penzel Construction Co., of Jackson, Mo. Carl Penzel, president of the company, designed the process for use on a bridge in Perry County, Mo.

For 110-volt operation, the firm used 100-foot-long, 500-watt insulated electric heating cables that were covered with wet burlap and a 2-inch-thick Fiberglas blanket. Thermostats were set at 80 degrees.

As a precaution against power

failure or other interruption, Penzel maintained thermostatically controlled LP-gas heaters under the bridge deck. He adds these suggestions: Do not allow the cables to overlap or cross each other; and be sure there is enough moisture or air to conduct the heat away from the cables to prevent the possibility of damage to the cable jacket or insulating blanket cover.

According to Penzel, the system "definitely reduces the cost and some of the hazards of winter concrete construction."



**Problem:** Right-of-way must pass stream at 45° angle, instead of nearly 90°. Situation further complicated because stream flows downhill at 8°.

## Outlasts the highway!

Tax dollars go further when you specify Wheeling Corrugated Metal Culvert Pipe for highway drainage. That's because Wheeling Culvert Pipe costs less to buy...less to install...and less to maintain! Here's why:

**Can't disjoint**—Wheeling Culvert Pipe comes in long lengths, so joints are few. What's more, they can't open because pipe has beam strength...and Wheeling Culvert Connecting Bands grip both pipe ends securely.

**Flexible strength**—Unlike rigid pipe, corrugated metal culvert pipe is flexible. So it easily absorbs shock and



extreme vibration caused by shifting fill and heavy truck traffic.

Equally important, this flexibility enables Wheeling Culvert Pipe to "bend" around fill (see

yourself — try this simple test with your garden hose).

**Choice of end treatments**—Special end treatments (including skews and bends) can be quickly, economically supplied by your Wheeling Culvert Pipe distributor.

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CONTRACTORS AND ENGINEERS

The 10-inch concrete deck of the new bridge during sub-freezing temperatures. The bridge is located in Perry County, Mo.

The 10-inch-thick reinforced-concrete deck for this pier in Brooklyn, New York City, was placed during subfreezing temperatures with virtually no heat protection. High-early cement was used; insulating blankets were used when temperatures were in the 28 to 35 degree range.



#### Case history

### Concrete at 28 degrees without heat protection

Placing exposed deck concrete at subfreezing temperatures, and without heat protection, was standard practice in constructing one of the largest and most modern deep-water terminals on the Eastern Seaboard—the 1,400 x 230-foot Moore-McCormack pier in Brooklyn, N. Y.

Its 10-inch-thick reinforced-concrete deck is supported by more than 7,200 piles, and it was virtually impossible to provide heat protection for the deck.

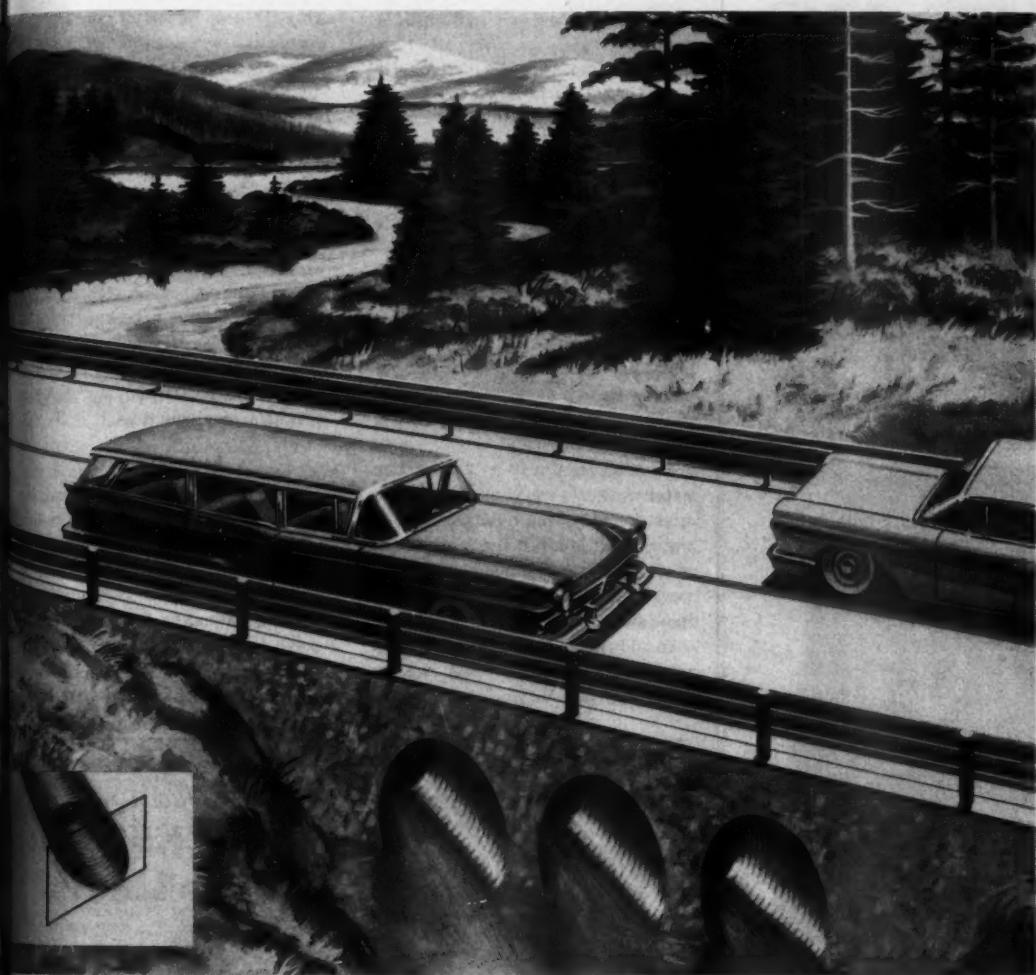
A total of 10,500 cubic yards of deck concrete was placed, made with Incor high-early-strength cement. Concrete placement was determined by the temperature at 8 o'clock each morning. Above 35 degrees F., the usual methods were used, without protection. Below 28 degrees, operations were suspended.

On the many days between 28 and 35 degrees (with a 24-hour forecast of not less than 20 degrees), concrete was placed and protected by 6 x 25-foot sheets of insulation (1-inch Fiberglas enclosed in a polyethylene envelope). This insulation effectively conserved the temperature of the pre-heated concrete (placed at an average of 65 degrees), as well as the additional heat developed within the concrete by hydration.

The insulation blanket was required for only 36 hours. Forms were stripped in 3 days, when concrete attained a strength of 2,000 psi; 28-day strength was 3,300 psi.

The general contractor was Nadal Baxendale, Inc. The concrete contractors in a joint venture were the Corbetta Construction Co., Inc., and Pavarini Construction Co., Inc.

For further information write to the Lone Star Cement Corp., Dept. C&E, 100 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 79.



Wheeling Metal Culvert Pipe with skewed and beveled ends. This allows the pipe structure to be designed with the

stream flow... permits the ends of the pipe to conform to the contour of the slope, thus improving efficiency and appearance.

Get the full story on Wheeling Corrugated Metal Culvert Pipe and Fittings (both copper steel and copper-bearing steel iron) from your Wheeling man. Wheeling Corrugating Company, Wheeling, W. Va.



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For efficient roadside drainage, use Wheeling Small Diameter Culvert Pipe.



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For deep, shifting fill, use Wheeling Large or Small Diameter Culvert Pipe.

### WHEELING STEEL!

Orleans, New York, Philadelphia, Richmond, St. Louis. Sales Offices: Atlanta, Houston. For more facts, use Request Card at page 18 and circle No. 289

OCTOBER, 1960

### Concrete-pipe group opens new offices

The American Concrete Pipe Association, Chicago, Ill., has opened two new regional offices. Jack C. Williams is representative of the western region, with headquarters in Palo Alto, Calif.

Mell Aycock, representative for the new southeastern region, will direct the office in Atlanta, Ga.



Fill material placed in thin layers by the scraper spread on the new Seattle Freeway in Washington is efficiently compacted by a D8 tractor-dozer with five-drum sheepfoot units, and an Essick VR-72 vibrating roller pulled by an Oliver OC-4 tractor. This combination obtained the required 95 per cent compaction in fewer passes than heavier equipment.

## Grading job Includes cleaning city streets

Vibrating roller improves efficiency of compaction on first grading job for the new Seattle Freeway

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This rig kept sweeping continuously during the working day, picking up the spillage from the trucks as well as the material tracked out on the tires.

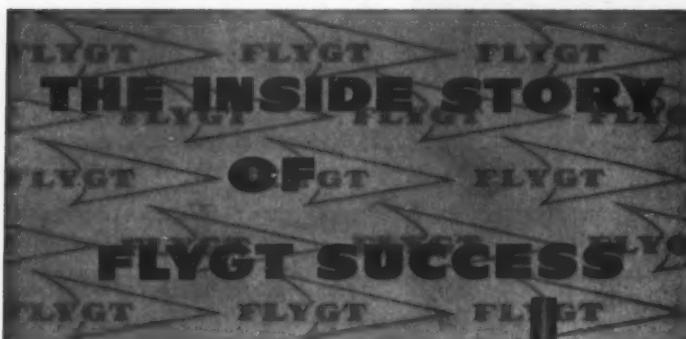
The washing of the streets with the water tanker resulted in some of the dirt being washed into catch basins and into low spots along the edges of the streets. This created another job for the contractor. He assigned a workman equipped with a street broom, shovel, spoon for cleaning catch basins and a pickup truck to get around over the route and to haul away the debris.

The combination kept the streets in a satisfactory condition.

### Remove houses

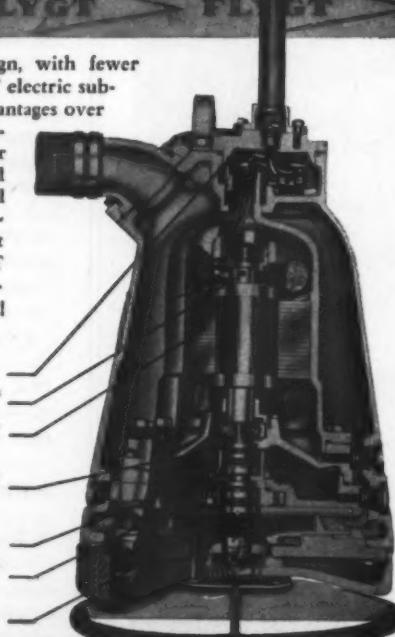
Actually the waste disposal was but a small part of Erickson's \$1.4 million contract for the grading, drainage, retaining walls, and other features of the 11-lane section of the Seattle Freeway extending 1.2 miles from the north approach of the new Lake Union Bridge.

When the contractor moved onto



Simple, revolutionary design, with fewer parts involved, gives FLYGT electric submersible pump definite advantages over ordinary pumps. This internal simplicity produces higher pumping capacity at costs well below conventional units. All cast parts are a special aluminum alloy; impellers to suit each application. Let FLYGT prove itself — ask for an on-the-job demonstration today!

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2. Shaft, journaled in SKF bearings
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4. FLYGT mechanical seals for heavy-duty
5. Oil for cooling and lubrication
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7. Impeller of special alloy



1½" B-38 L running dry on construction job



3" B-80 L under water level on river job



6"-8" B-150/200 L on power house dam project



HOOSICK FALLS, N.Y.



WESTERN SALES & SERVICE: STANCO MFG. & SALES INC., 1666 Main St. (CORNER OF OLYMPIC) SANTA MONICA, CALIF.  
PUMP BETTER ELECTRICALLY — USE FLYGT!

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### Contractors and Engineers staff article

Flushing and sweeping city streets are not usual construction operations, but they became practical necessities on the grading of the first section of the new Seattle Freeway north of the big new Lake Union Bridge.

The Erickson Paving Co., general contractor for the job, had to move nearly 12,000 cubic yards of unsuitable material off the right-of-way and dispose of it in a deep ravine in a city park about half a mile from the job. The haul over city streets required approval of the city of Seattle, which made keeping the streets clean a primary requirement.

Erickson assigned a 3,000-gallon water truck to a constant patrol of the streets used by the haul trucks. The water truck followed the route of the haul units all day long, and then worked long enough in the evening to be sure that the streets were clean.

In addition to the flushing, the contractor hired a Wayne power sweeper from Sweeper Service Co., Seattle.



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Medium and large sizes.

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CONVERTIBLE  
MODEL  
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MODEL  
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Blue 100% wool.

Grey cotton twill flannel lined.

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For more facts, use Request Card at page 18 and circle No. 291



An unusual construction requirement on this job—street cleaning—is handled by a rented Wayne street sweeper. It works a full shift each day, sweeping streets used by trucks hauling unsuitable material from the job site to a dump area.



Flushing is done by a 3,000-gallon water truck, which makes a constant patrol of streets used by the haul units. The rig worked all day, then put in enough time after the day's shift to make sure streets were clean.



Some of the dirt washed into catch basins and low spots along gutters is cleaned up by a contractor's employee by hand. The pickup hauls away the material.

the site last February, there were 99 houses to be removed. Some of these were sold and moved off the site by house movers, but Erickson had to demolish quite a few that were not salable. This job was handled quickly and efficiently by a Northwest 80-D crane and a clamshell bucket. The big dam easily chewed up the frame structures.

Removal of footings, basement walls, and concrete slabs was another job. These were dozed or clammed out. The chunks of concrete were loaded by tractor shovels into trucks, weighed, and placed either in the bottom of deep fills or used as riprap to protect steep excavation slopes. This material was paid for by the ton as a contract item.

There were several paved streets in the area which the contractor left in place for haul roads as long as possible. Then these were broken up with a Hydra-Hammer and the material used with the other broken concrete.

Most of the 613,000 cubic yards of excavation in the job was moved by a

spread of Cat DW21 and DW20 scrapers push-loaded by a pair of D9 tractors. Except for encountering some of the old basements and building footings, the loading presented few problems.

Getting the material compacted to the required 95 per cent density was more troublesome.

Early in the job, the contractor used a heavy grid-type roller, together with a 50-ton rubber-tire compactor, both pulled by D8 tractors. These machines had to make quite a few passes.

In hopes of speeding up this operation as well as cutting its cost, Erickson made a complete switch to sheepfoot and vibratory rollers. One of the D8's pulled 3-drum and 2-drum sheepfoot rollers in tandem. This rig was followed by an Essick VR-72 6-foot-wide vibratory roller pulled by a little Oliver OC-4 tractor. This combination accomplished the required compaction with fewer passes and greater speed than the heavier machines.

(Continued on next page)

## SILENT HOIST sets the pace again...



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KRAKE KAR

2 SIZES:

MODEL FAX—12,000 lbs. cap.  
MODEL FAY—20,000 lbs. cap.

360° SWING



180° SWING

6 SIZES:

1 1/2, 2 1/2, 5, 10, 12 1/2 tons

**360° BOOM SWING**—Now . . . another addition to the famous family of Silent Hoist KRAKE . . . the original Mobile Swing Boom Crane! **BOOM ROTATION**: All-Hydraulic 360° continual rotation on heavy-duty double-race ball-bearing turntable. **BOOM**: 15/22 ft., manual or hydraulic telescoping. **TRANSMISSION**: Hydraulic power shift directional in combination with flywheel torque converter **STEERING**: Full time power steering, finger-tip control. **ENGINE**: Heavy duty 6 cylinder valve-in head type. **BOOM TOPPING**: Horizontal to highest vertical in only 8 seconds. **BOOM HOISTING**: Load block 3 parts of line 25 to 55 fpm. **TIRE**: Dual pneumatic tires on traction axle for high flotation and extra blow-out protection. **TOTAL VISION AND SAFETY**: No obstruction in any position of load or crane; operator fully protected through 360° rotation of boom. Write for complete details in illustrated bulletin #99.

**180° BOOM SWING**—The Standard widely favored All-Hydraulic or Mechanical 180° swing boom crane models. Lifts, carries, and places any load up to 12 1/2 tons. One engine powers the machine for travel and all crane applications—finger-tip control. Front traction wheel drive supports chassis and crane load. 2 geared speeds for hoisting, topping, and swinging. No tail swing—Boom never passes over Operator's head. Write for complete details in illustrated bulletin #79.

**SILENT HOIST & CRANE CO.**  
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dependable, "on-the-job"  
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**Dual purpose model GO 2245-S  
Emergency Light-Power and 200  
amp. DC Welder**

For more facts, use coupon or Request Card at page 18 and circle No. 292

OCTOBER, 1960

A Cat D9 push-loads a DW21 on one of the cuts being made for the freeway. At this point, the freeway will go under an existing bridge.



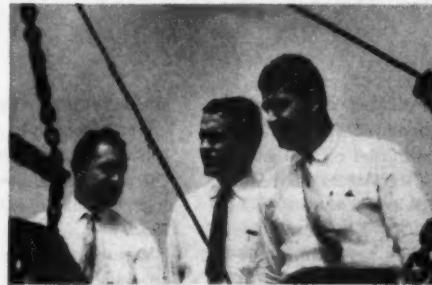
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One area of the alignment was underlaid with a bed of wet, soft compressible material that had to be removed. The 80-D with a 2 1/4-yard dragline bucket excavated this material and loaded it into the dozen 10-wheel dump trucks that hauled to the waste dump in Cowan Park. Some of the material above the soft stratum was suitable for use in the fills after it was dried. The dragline separated these materials as it worked, and the trucks were directed either to the waste dump or the fill, depending on the quality of the material they carried.

Keeping the waste dump in operation was also a problem. The soft waste material seemed to fluff up as it was dumped, and the two D8 tractor-dozers trying to keep the dump in operation were dragging bottom in it most of the time. As the dump was built out, a layer of better material was placed over the top to provide footing for the trucks. They got out as far as they could, and then the dozers pushed the material on over the edge.

To minimize the tracking of this sticky material back onto the streets and to hold down dust, crews covered the roadway areas of the dump with a layer of sawdust. This material was delivered to the job in 30-ton lots by the Sawdust Supply Co. It was spread

Dragline gets inspection from Keith Hutchison, Greer vice president and technical director, Phil Owen and Chuck Daub (l. to r.). Owen and Daub are Standard Oil lubrication specialists who render the school technical assistance on lubrication problems. Both have engineering degrees and both have completed Standard's Sales Engineering School. Daub has ten, Owen five years of field experience serving commercial customers.



## Standard Oil helps this school teach men how to keep a construction job going



Hutchison, Owen and instructor John Rolando watch student load 17-yard off-highway dirt hauler, one of school's 26 units.



Unsuitable material in an area next to a street that must remain as a service road is excavated by a dragline with 2 1/4-yard bucket. A 5-foot blanket of broken concrete and other heavy material holds the bank of the steep excavation. Some of the upper material, suitable for fills, will be dried and used. The D9 cleans up around haul trucks and dragline.

by the dozers and a Cat 12 motor grader that maintained the haul roads.

### Mile of retaining walls

The elaborate new freeway is made up of three separate roadways. Two of these are four-lane roadways carrying one-way traffic in opposite directions. The third is a roadway of three or four reversible lanes used to accommodate peak traffic inbound in the morning and outbound in the afternoon. On the new Lake Union Bridge, the one-way lanes are side by side on the top deck, while the reversible lanes are on the lower deck. As



the freeway leaves the bridge, all of the roadways are brought to the same level.

The transition from the lower deck level, together with the very complicated system of interchange ramps and grade separations for intersecting streets, requires a large number of retaining walls. The contract calls for the construction of approximately a mile of retaining walls ranging in height from 5 to 33 feet. This work, together with a short tunnel and two bridges, was sublet to John E. Alexander, Seattle. The 44,000 cubic yards of structure excavation and the placing of 91,000 tons of special gravel

backfill behind the retaining walls were done by the general contractor.

Another large item, the placing of some three miles of drainage and sewer pipes in a wide range of sizes was sublet to a subsidiary company, Alia & Erickson.

#### Lubrication

The earthmoving rigs were serviced right in the field by two mobile lube rigs fitted with Alemite and Lincoln pumps and reels and using Texaco lubricants. The rigs were serviced during lunch breaks and after shifts.

These rigs also carried tanks of diesel fuel and gasoline to supply the



A Mack dump truck is unloading the excavated material in what was a ravine in Seattle's Cowen Park. The D8's had a tough job with this soft material.

equipment. Since city restrictions on above-ground fuel storage made it impractical to store fuel on the job, daily deliveries were made by Texaco tank wagons to the job site.

#### Personnel

For the Erickson Paving Co., Ericksons dominate the supervisory staff with Carl E. serving as project manager and Reid and Keith sharing the duties of job superintendents. Bill Wilson is grade foreman, and Bob Schasten, master mechanic.

For the Washington Department of Highways, C. V. "Rusty" Drew is resident engineer. The Seattle Freeway construction is handled by the department's Seattle Urban District under the supervision of W. E. McKibben. The construction engineer for the Washington Department is E. C. Simpson. The director of highways is W. A. Bugge.

THE END

#### Pennsylvania road map

■ Pennsylvania's Department of Highways has published the state's 1960 official highway map. It includes small maps of the larger communities, a mileage table, a listing of state-maintained public recreation areas, and other features.

Four-lane divided highways that are part of the National System of Interstate and Defense Highways are marked in yellow, and substantial portions of the system are designated by their new route numbers.

Copies of the map may be obtained free of charge from the Department of Highways, North Office Bldg., Harrisburg, Pa.

#### Computer aids in design of prestressed units

■ A computer is being used by T. Y. Lin & Associates, Van Nuys, Calif., as an aid in designing prestressed-concrete structures. Speed and accuracy have been achieved in the design of single and double tees, I sections, box sections, continuous spans, and flat plate designs.

This type of computation has proved particularly suited to prestressed-concrete design, which entails many repeat calculations.

For more facts, use Request Card at page 18 and circle No. 294

### Greer Excavating and Mechanics School has learned one of the lessons it teaches—how to keep equipment in service

**Situation:** Time is money at Greer Excavating and Mechanics School, Braidwood, Illinois. The school promises its students hours of experience operating equipment. It teaches them how to maintain and service the machinery they work with. It also teaches the men how important it is to do the job right and on time.

Up to 70 students, guided by nine experienced instructors, work 26 pieces of equipment almost every daylight hour, seven days a week, winter and summer. Bulldozers, scrapers, trucks, shovels and draglines must stay in service in spite of the rugged treatment they get.

**What was done:** From the first day of school more than three years ago, Greer Institute's equipment has been serviced exclusively with

Standard Oil gasoline, diesel fuel, motor oil and greases. No unit has ever been down due to lubrication failure or because of slow delivery. How come? Because Phil Owen, an experienced Standard Oil lubrication specialist from Joliet, just 20 miles from the school, makes regular calls to check out any lubrication problem. From Wilmington, only 5 miles away, Standard Oil agent R. J. Kavanagh makes deliveries of gasoline, diesel fuel, lube oil and grease as often as every other day. The school never needs to telephone for service.

**What you can do:** To get this kind of service call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write, **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

You expect more from **STANDARD** and you get it!



Plenty of dirt to work with. School site is on 1,700 acre tract that has been ripped, torn and piled as result of strip mining. Greer instructor, John Rolando teaches student how to use skid shovel.





Working at about half the cost of a dragline operation, a Cat No. 14 grader with Model 64 DoMor elevating grader loads 10½ yards of material to a truck in about 35 seconds during fill operations for the new electronic railroad classification yard in North Little Rock, Ark.

## Large-scale earthmoving fills in unstable site for rail classification yard

An undrainable site of boggy clay being filled in at North Little Rock, Ark., will soon become an \$8 million electronic classification yard for the Missouri Pacific Railroad. Although the base stratum of silty clay is completely saturated with ground water, large-scale earthmoving is building up the low, spongy site—part of an alluvial plain.

The grading contract for the yard, which is 1½ miles long and 1,500 feet wide, is held by the William A. Smith Contracting Co., Kansas City, Kan. It calls for 1,174,000 cubic yards of fill material, plus ditch and canal excavation of 115,300 yards. Revised plans may bring the total to nearly 1,500,000 yards.

A silty sand is working out well as fill material. It is laid in lifts of 12 to 18 inches to make a 6½ to 7-foot cap. Lifts of 8 inches were tried at first, but the clay underneath was too spongy to permit good compaction. The sand fill drains well, and its weight is not too much for the clay.

Blading and compaction are the key to processing the fill, according to job superintendent Don Larimer. After it is dumped in windrows, the sandy loam is spread by a Caterpillar D8H tractor with a dozer and then bladed down by two Caterpillar No. 12 motor graders, joined occasionally by a No. 14. It is finally rolled with pneumatic compactors. In addition, vibrating compactors are used on the haul roads.

When the lift has been built up to proper depth, two Bros 13-wheel rollers make five passes. Finally, a D6 tractor with three Hydrapacs is put on the haul roads and stays until the material sets up sufficiently for good hauling.

Missouri Pacific buys the borrow from an individual, and it is trucked four miles from pits on the north bank of the Arkansas River. Hauling is done under a subcontract by J. A. Tobin Construction Co., Kansas City, Kan., with 45 GM sideboarded tandems.

Loading is done by Smith personnel and equipment. Two Caterpillar No. 14 motor graders with Model 64 DoMor elevating grader attachments are usually used. The combination can put 10½ cubic yards into a truck in about 35 seconds. In four days running, each grader averaged 420 yards per hour.

Because of the spongy ground, heavy rain or high river water occasionally make it impossible for loaded trucks to pull out of the borrow pits.



They've engineered Interstate 85  
to last 50 years and more!

# CONCRETE is the one pavement that can be accurately designed to fit future traffic loads!

Interstate System highways like North Carolina's route 85 pictured here owe much of their extra long life expectancy to concrete's dependable load-bearing strength—computed mathematically.

The strength of concrete pavement is in the concrete itself—not in built-up, graded, layer construction. Compressive and flexural strengths can be measured exactly—right down to the last psi. So designs are based on facts—not intuition!

And because concrete acts as a beam, even one extra inch of thickness adds as much as 25% to wheel load capacity. This same structural quality makes it possible to analyze stresses for all loads the pavement

will carry. The designer then makes the pavement thick enough for unlimited operation of the more frequent loads as well as the expected heavier loads.

That's where real economy comes through—only concrete lets engineers design highways to last 50 years and more, with upkeep costs as much as 60% lower than for asphalt. Yet concrete's first cost is moderate. There is no need to over-build. The accuracy of today's proved concrete design methods provides minimum-thickness pavements for the heaviest expected traffic.

Look for concrete on many more miles of the new Interstate System and other heavy-duty highways.

**PORLTAND CEMENT ASSOCIATION**

*A national organization to improve and extend the uses of concrete*

For more facts, use Request Card at page 18 and circle No. 295



Research year after year has given engineers comprehensive data on the behavior of concrete roadway slabs as well as the supporting subgrade. Mobile units such as shown above can be set up to measure pavement deflections to an accuracy of one-half thousandth of an inch.



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▲ Loading of borrow has averaged as high as 477 yards per hour with the two grader and elevating-loader combinations and the 45 trucks on the job. The silty sand borrow is being put down to form a 6 to 7-foot cap on the boggy site to support the new facility.

After rollers have made five passes on the lift, this Caterpillar D6 tractor with three Hydrapacs is put on the haul roads until the material sets up enough for good hauling. ▶



row pit. At these times, two 4-yard draglines are rented until the No. 14's can work again. The draglines each average about 380 yards per hour under good conditions, but at about double the cost of DoMor leading.

Part of the 4-mile haul from pit to fill is over North Little Rock's main artery, Arkansas 70 and 130. To get the 45 trucks on and off it with a minimum disruption of traffic, the subcontractor bought two traffic lights. Installed with the city's permission, they will be donated to North Little Rock when the project is finished.

The job's two shifts are arranged so that little or no hauling is done during the morning or evening traffic rushes. The day shift is on from 7:30 in the morning until 5 p.m., and the night shift works from 6 in the evening until 5 a.m.

Missouri Pacific is engineering the yard, doing the track work, and installing electronic controls. The project, which will handle 3,000 cars per day, is expected to save the railroad nearly \$2 million a year. THE END

#### Structural wood-fiber manufacturers organize

A group of six companies has formed the Structural Wood Fiber Products Manufacturing Association in Washington, D. C. Producing preformed wood-fiber products from wood excelsior and cementitious binders makes companies eligible for membership.

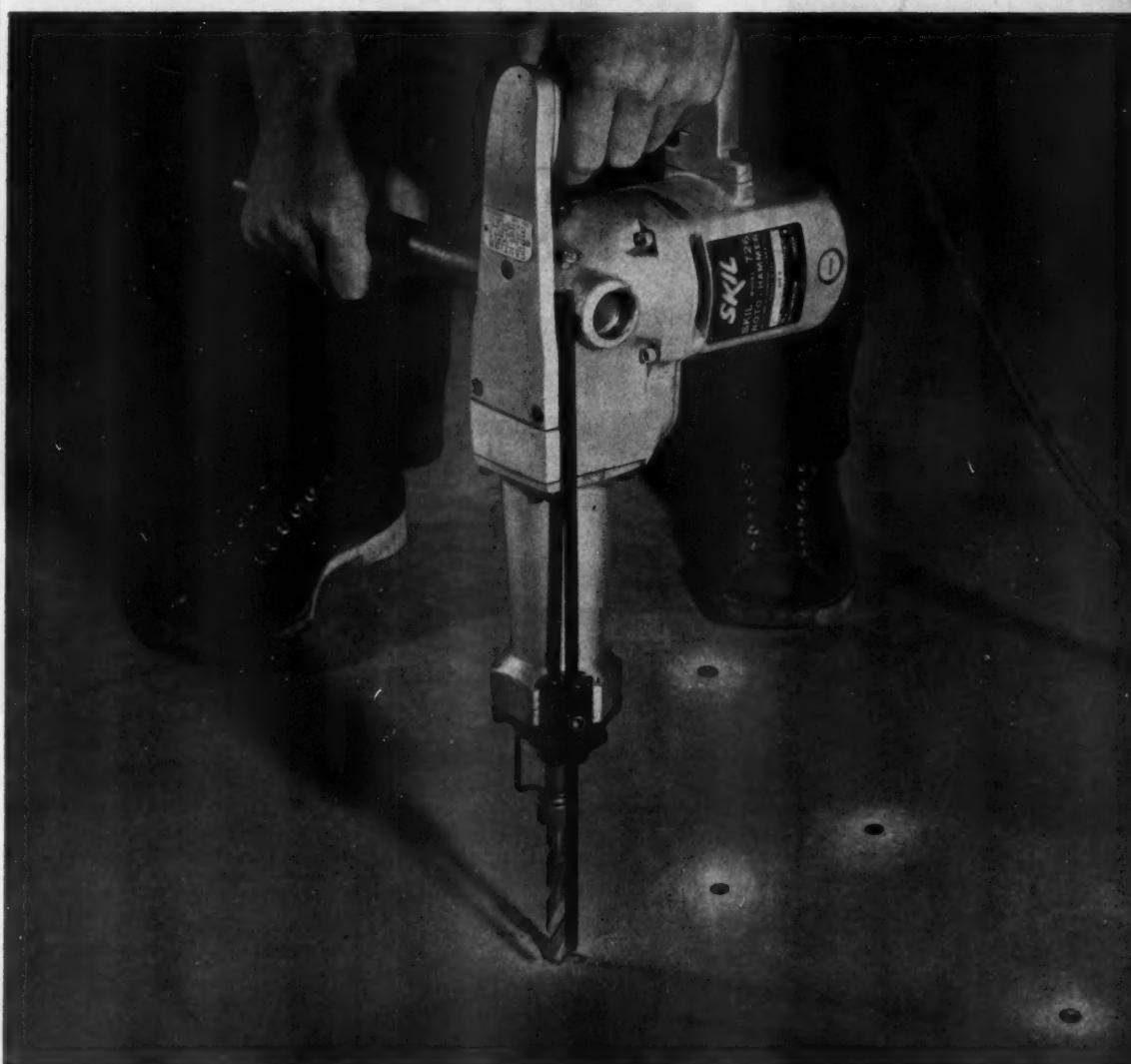
The purpose of the group is to promote high standards in the industry and to inform the building trade and the consumer about structural wood-fiber products and their uses.

The members of the new association are Concrete Products, Inc., Brunswick, Ga.; The Flintkote Co.'s Insulrock Division, Richmond, Va.; Fireproof Products, Inc., Cornell, Wis.; Martin Fireproofing Corp., Buffalo, N. Y.; Porete Mfg. Co., North Arlington, N. J.; and Tectum Corp., Columbus, Ohio.

#### Cast-iron-pipe group appoints representative

A new field representative for the Cast Iron Pipe Research Association is Roger G. Dittig, Jr. He will serve the New England states, and Pennsylvania, New Jersey, New York, Delaware, and Maryland. His headquarters will be in Bethlehem, Pa.

OCTOBER, 1960



## New Skil Roto-Hammer—lowest cost way to drill masonry holes! Compare:

ACTUAL DRILLING TEST	SKIL NO. 726 ROTO-HAMMER	1 Carbide Bit required*	19.38 hours of labor	\$30.14 (labor plus bit)	Cost: 8¢ per hole
Based on 1000 holes (3/4" x 4" deep) in masonry —labor at \$3.00 per hr.	ORDINARY HAMMER	24 Star Drills needed	100.4 hours of labor	\$337.20 (labor plus bit)	Cost: 34¢ per hole

\*New Skil carbide bits stay sharp 25 to 30 times longer than star drills.

The SKIL Roto-Hammer is not only the fastest way to drill holes, but easiest too. Automatic power rotation eliminates tiresome hand turning of star drills.

Ask your Skil distributor for demonstration, today. Look under "Tools—Electric" in the Yellow Pages. Or write Skil Corporation, Dept. 107-K, 5033 Elston Avenue, Chicago 30, Illinois. In Canada: Skiltools Limited, Trenton, Ontario.



No springs to break. Electro pneumatic drive eliminates springs for lowest maintenance cost. Model 726 (3/4"-1") and Model 736 (1"-2").



...AND SKILSAW POWER TOOLS

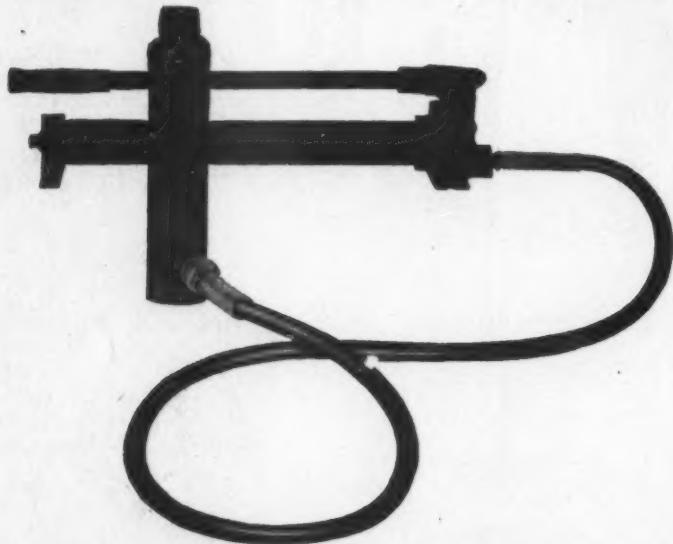
For more facts, use Request Card at page 18 and circle No. 296

PRACTICING WHAT HE PREACHES, Jack Bennett, instructor in the Detroit Diesel Engine Division's service training school for owners and operators in Detroit, tries out an Austin-Western grader near Williams Bay, Wis. The whole staff of the school went to different parts of the country recently to increase their on-the-job experience in operating GM Diesel equipment.



For more facts on Gulf spread on Insert, use Request Card at page 18 and circle No. 300

## VERSATILE POWER PACKAGE



## DUFF-NORTON RAM-PAC® HYDRAULIC RAMS AND PUMPS

The Duff-Norton Ram-Pac line provides a versatile source of power to apply from 10 to 100 tons of force in any direction—with little effort.

The twelve rams may be used with the hand or power pumps as portable sources of power for adjusting, testing, bending—pulling gears, sleeves and cylinder linings—pushing pipe or culvert—for heavy moving and lifting. They also

are used for permanent installation in hydraulic jigs, fixtures and presses.

The five pumps include two hand pumps, an air-hydraulic pump, an electric pump and a gasoline powered pump. Attachment units, accessories and fittings further increase the versatility of the line. For description and specifications ask your distributor or write for Bulletin AD-90.

## DUFF-NORTON JACKS

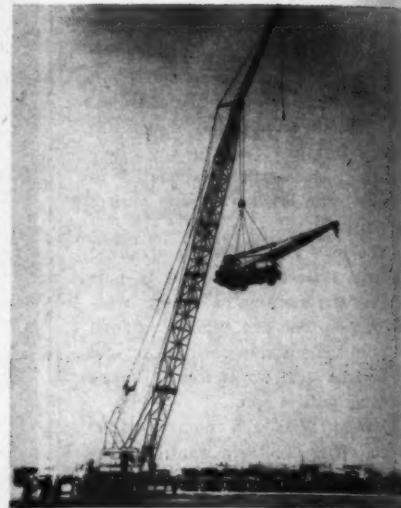
Four Gateway Center • Pittsburgh 22, Pa.

DUFF-NORTON JACKS  
Ratchet • Screw  
Hydraulic • Worm Gear

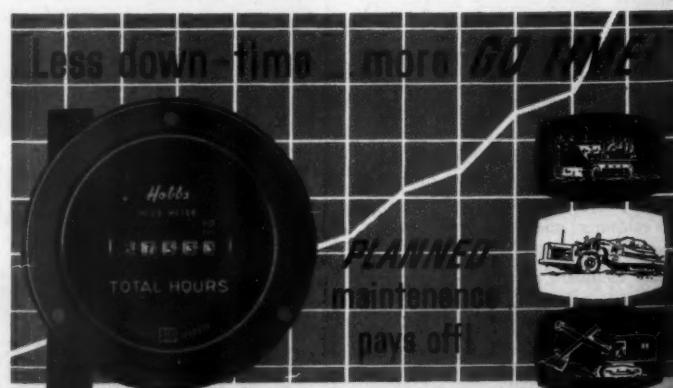


COFFING HOISTS  
Ratchet Lever • Air  
Hand Chain • Electric

For more facts, use Request Card at page 18 and circle No. 297



THIS GIANT TRUCK CRANE dangles its "little brother," a machine of the same type, 100 feet in the air at a demonstration by Harnischfeger Corp., Milwaukee, of P&H equipment. The big crane can lift up to 80 tons and wield a 200-foot boom plus a 50-foot extension. The Miti-Mite weighs only 31,000 pounds but can wield a 70-foot boom plus a 20-foot extension and can handle loads up to 25,000 pounds. It is said to have more operating flexibility than any other truck crane of any size.



## Hobbs HOUR METERS

For better performance and longer service from your equipment, plan maintenance on operating TIME... you'll also set up a realistic basis for renting and leasing, service contracts, buying and selling. Be sure with Hobbs electric timing instruments—revolution counters can't do the job! Available for ALL your equipment: d-c meter for engine or battery-powered units... a-c meter for line-powered equipment.

- Manufacturers also of pressure switches... shock-mounted head, tail and dash lights... indicator, instrument and warning lights. Distributors in principal cities... WRITE FOR CATALOG 600.



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For more facts, use Request Card at page 18 and circle No. 298

CONTRACTORS AND ENGINEERS



## Where heavyweights move job records prove... **FIRESTONE STAMINA KEEPS PROJECTS ON SCHEDULE!**

That sure-fire stamina of cord and rubber in Firestone off-the-highway tires pays off big. These dependable tires keep costly equipment on the go and meet tightest schedules. Such exclusives as Firestone Rubber-X—longest-wearing rubber ever built into Firestone tires—and Firestone Shock-Fortified nylon cord—that takes the most grueling impact punishment in stride—see to that! Another plus: Firestone's Giant Tire Service stands back of every Firestone tire, and a Firestone Tire Expert will match tires to specific project needs and handle your tire maintenance problems. For more worktime and less downtime, see your Firestone Dealer or Store. Or write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Co., Akron, Ohio.

ALWAYS SPECIFY FIRESTONE TIRES WHEN ORDERING NEW EQUIPMENT

# Firestone

**BETTER RUBBER FROM START TO FINISH**

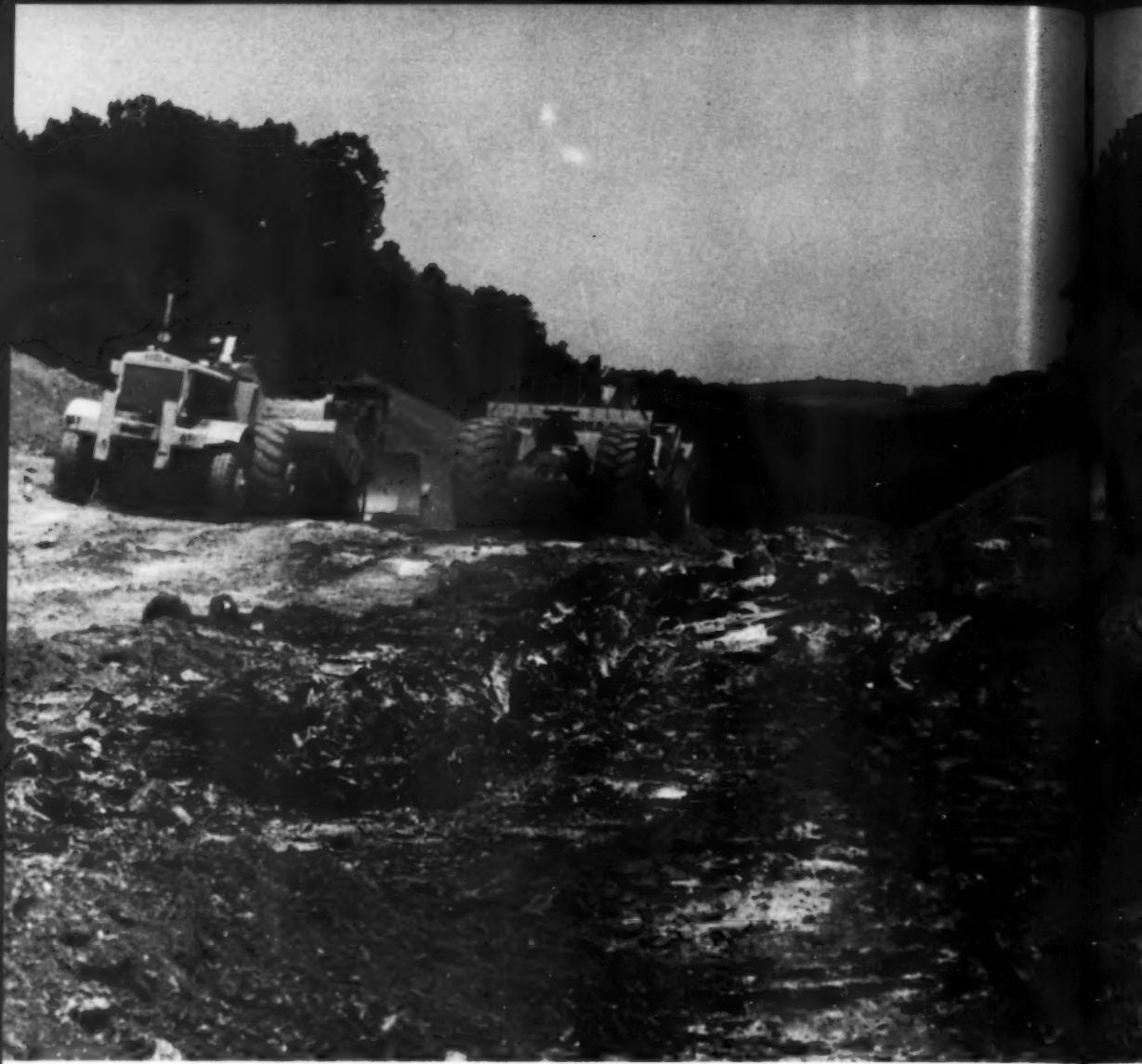
For more facts, use Request Card at page 18 and circle No. 299



TUBELESS OR TUBED

Copyright 1960, The Firestone Tire & Rubber Co.

\*Firestone T.M.



Three weeks lost to bad weather, but Stuart, Inc. stay  
**GULF MAKES THINGS RU**

This Maryland road project calls for the removal of 1,750,000 cubic yards of rock and earth—including 200,000 yards of blasted rock, and 500,000 yards of rooted material.

It's a 7½-mile section of Maryland Route 97—a feeder route to Washington, D.C. And in spite of three weeks of weather delays, J. O. & C. M. Stuart, Inc., is keeping pace.

"Staying on schedule when you can't control the elements is no accident," says Henry M. Scott, General Superintendent. "You do it with the elements that can

be controlled—your equipment!"

Mr. Scott started this control with an effective preventive maintenance program: oil changes every 120 hours, grease jobs each 10-hour day, and air cleaners changed daily.

The company's selection of a crankcase oil shows further attention to equipment performance. The choice: Gulf® Super-Duty Motor Oil. Mr. Scott tells why, "Our spread includes scrapers, tractor dozers, crawler tractors, motor graders, a dragline, and two 50-ton rubber-tired compactors. And with only one oil for all equipment, the trouble is wiped out."

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To keep them rolling, these two trucks service units on the job. One truck stocks Gulf diesel fuel in an 8,000-gallon storage tank. The other truck carries Gulf lubes.



Conference. C. M. Stuart, left, Vice President, Henry Scott, center, General Superintendent, and N. K. Arch, Gulf Sales Engineer. Gulf products have helped keep project on schedule—in spite of poor weather.

## Inc. stays on schedule... G RUN BETTER!

ment, the wrong oil won't get into crankcases and cause trouble at a later date."

In addition, Stuart switched to Gulf® diesel fuel and wiped out the problem of heavy sulphur deposits on pistons and rings. Finally, one grease is used for all units—Gulflex® A. In sum: Gulf products hold downtime to a minimum, keep equipment on the job.

Try Gulf fuels and lubricants on your next project. And you'll find out why Gulf makes things run better! For more information call your nearest Gulf office. Or, write us.

**GULF OIL CORPORATION**  
Dept. DM, Gulf Building  
Houston 2, Texas



SP-9883

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ORIGINATE

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Get the right unit for your job...  
Only Vibro-Plus can provide the  
right vibratory compactor to meet  
any field condition... because only  
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**VIBRO-PLUS PRODUCTS, Inc.**  
STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES.

For more facts, use Request Card at page 18 and circle No. 301

## Scheduled maintenance with little paper work

A system of Scheduled Maintenance for construction machinery can be handled without the complications and heavy paper work of some preventive-maintenance programs. It can save the owner money as well, because overtime hours spent fixing equipment on a job are reduced and fewer standby units are needed.

The key to the system, which was developed by International Harvester, is the Operator's Shift Ticket. Filled out by the operator at the end of his shift, it is a record of hours worked, final hour meter reading, and loads handled. On it are mentioned any me-

chanical details requiring attention. Small problems can be corrected before they lead to major failures.

The information in the Operator's Shift Ticket is posted daily to the Scheduled Maintenance Control Record, which tells the exact hour meter reading of the next maintenance inspection and enables the owner to forecast the approximate inspection date. A chalkboard is a favorite method used to control inspections since it shows at a glance the "due dates" of all inspections. Overdue inspections can be indicated in red.

The final basic forms needed for the

system are the Inspection and Record sheets. Listing the maintenance checks in a natural order minimizes starting and stopping the engine and eliminates extra work.

The system requires little writing. A check mark is used for an O.K., an "R" for repairs, and an "O" for adjusted. No more than about two per cent of normal operating hours is needed to carry out the necessary checks. If inspections are made after hours, no production time is lost.

Although not part of the Scheduled Maintenance system, I-H Job Cost Records are valuable for job estimat-

ing purposes and for computing income taxes. The forms make it easy to record fuel consumption and expense, oil and grease requirements, and working time compared with lubrication, maintenance, standby, and down time. Space is provided on them for production records and repair costs.

A feature of the Scheduled Maintenance program is a handy envelope that holds all the records for one machine. On the outside are listed special equipment on the unit, the lube change periods, filter numbers, and any other information the owner may want instantly.

### HRB bulletins on road paving and planning

Three new bulletins have recently been published by the Highway Research Board. They deal with highway programming, pavement performance, and asphaltic concrete.

Bulletin 249, "Highway Needs and Programming Priorities," contains four reports. The first describes a method for determining when the costs of congestion exceed the cost of reconstructing a stretch of highway, the second is a study of advance programming, the third proposes criteria for highway-improvement expenditure, and the fourth deals with sample survey methods. The bulletin is priced at \$1.80.

"Pavement Performance Concepts," Bulletin 250, contains a report outlining a program to predict road life from traffic flow characteristics, and a report on a method determining the dynamic force a vehicle exerts on a highway. A third paper in the bulletin describes how a panel of highway users evaluated the "serviceability" of 138 pavement sections; their ratings were then compared with the objective surface measurements. The publication costs \$1.40.

The third new HRB bulletin, No. 251, is entitled "Asphaltic Concrete Construction." The three reports it contains deals with full-scale asphaltic construction in the laboratory, a comparison of the density of laboratory mixes with the density of similar mixes in place after several months of traffic, and the compaction of hot asphaltic concrete with steel-wheel rollers. The price of the bulletin is \$1.

The three bulletins are available from HRB, 2101 Constitution Ave., Washington 25, D. C.

### PM marketing chief

Lorin L. McCarthy has been named head of Pacific Mercury's Marketing Division, Sepulveda, Calif. He will be in charge of marketing, sales, and advertising for the PM Construction Equipment Division, which produces electric plants, concrete vibrators, street barricades, flasher warning lights, and centrifugal self-priming pumps.



### FROM WHERE YOU STAND— WIX IS IMPORTANT IN THIS PICTURE

Wherever "Mother Earth" is getting a face-lifting job and Preventive Maintenance is really put to the test, WIX Engineered Filtration is no idle bystander. WIX Oil Filter and Air Filter Cartridges have the rugged integrity built into them to keep that dust, grit and dirt out of hardworking engines... more positively and for longer periods between change.

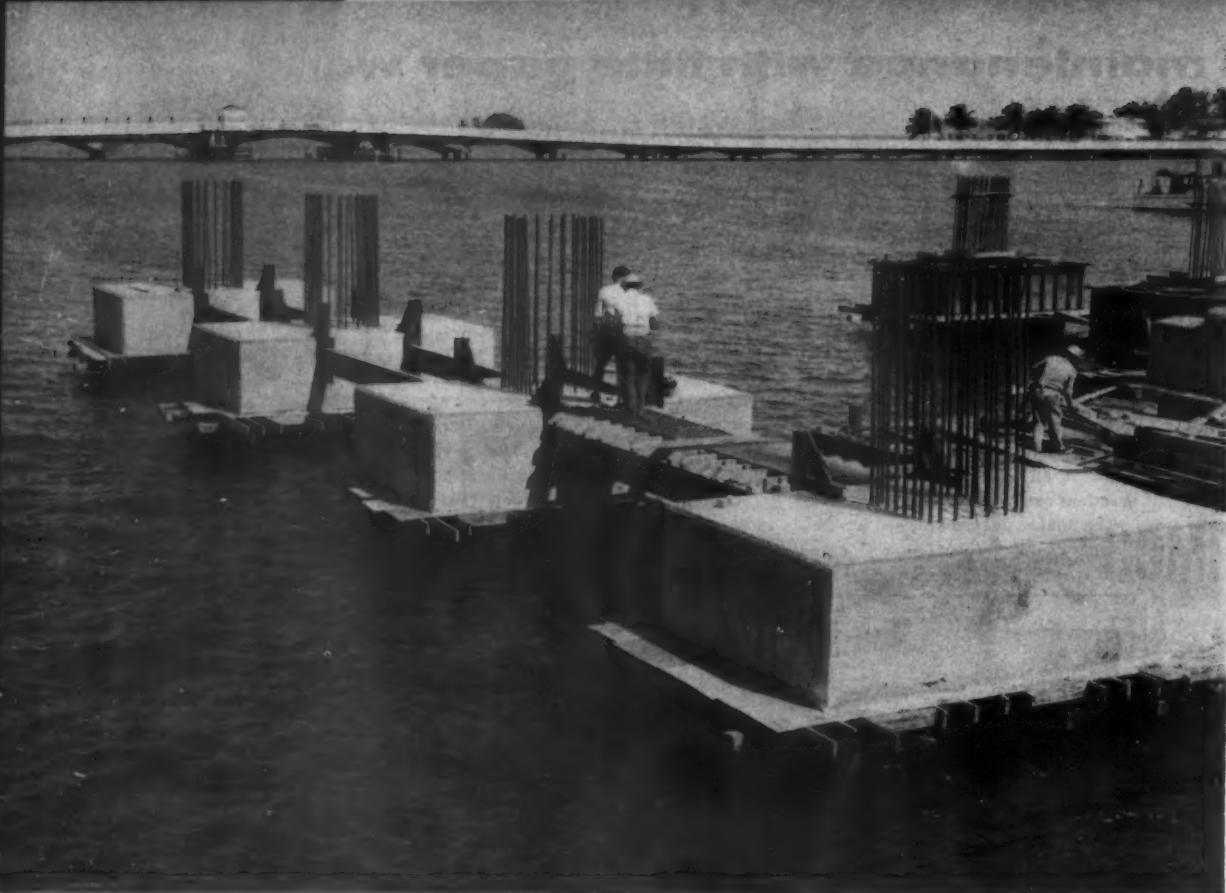
Dirty lube oil and contaminated diesel fuel, mean DOWN TIME—often the difference between profit and a loss! No matter what equipment you have on your spread, WIX provides Filter Cartridges that guarantee extra protection. You'll find WIX Engineered Filtration is the hardest working dollar on the job.

Call your automotive jobber for the full story on WIX... the economy of WIX-PAX Service... the FREE WIX Filter Survey... and FREE WIX Preventive Maintenance Service.

**WIX CORPORATION • GASTONIA, N.C.**

In Canada: Wix Corporation Ltd., Toronto  
In New Zealand: Wix Corporation New Zealand Ltd., Auckland

For more facts, use Request Card at page 18 and circle No. 302



Prestressed, precast, and cast-in-place concrete play parts in work on the 2,100-foot MacArthur Causeway that runs on 23 pile bents, 14 piers, and two main piers to link Miami and Miami Beach. This is one of the 14 piers; 24-inch prestressed piles have been capped and steel stringers positioned on welded brackets to support the tie-beam form.

Prestressed girders and piles, precast bulkhead panels go into

## A new concrete causeway

Contractors and Engineers staff article

Using prestressed-concrete girders and piles, precast-concrete bulkhead panels, and a fleet of floating rigs, Heavy Constructors, Inc., Miami, Fla., has been pushing the new 2,100-foot-long MacArthur Causeway across the Biscayne Bay Channel between Miami and Miami Beach, Florida.

This \$3,600,000 contract section of the existing 4.5-mile MacArthur Causeway is being built to replace the present drawbridge structure that provides only a 10-foot vertical clearance over the heavily traveled channel. The new structure will also have

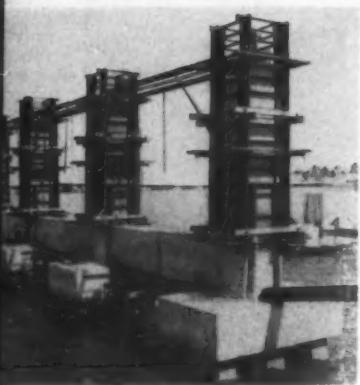
a steel drawbridge spanning the channel, but it will be 109 feet long and have a vertical clearance of 35 feet. This clearance alone will cut bridge openings by over 50 per cent.

### Drive piles

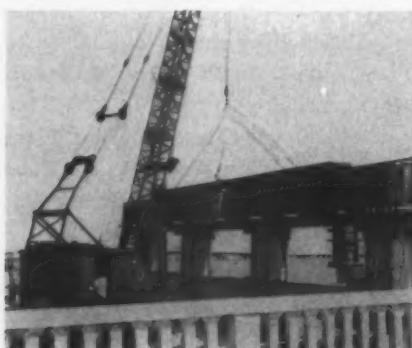
The new structure consists of 23 pile bents, 14 piers, and 2 main piers straddling the 109-foot drawbridge channel span. Working from the east abutment, there are 17 pile bents on 40-foot centers, 3 pile bents on 65-foot centers, 7 piers on 65-foot centers, one 109-foot channel span, 7 piers on 65-foot centers; and 3 pile bents on 65-foot centers.

Pile bents on 40-foot centers are of 16 prestressed-concrete piles, each 18 inches square and 42 to 57 feet long. These were driven to refusal by McKiernan-Terry DE-40 and Vulcan OR hammers handled by the floating rigs. Heavy Constructors has a 40-ton revolving crane, two 40-ton stiffleg derricks, and a Link-Belt 30-ton crane, all mounted on barges. There is also a Lorain  $\frac{1}{4}$ -yard crane on a barge to handle the bulkhead work.

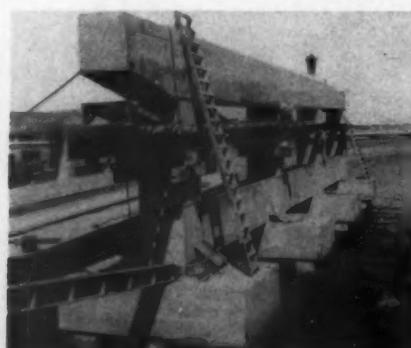
The piles were tied together by a 103-foot-long cast-in-place cap 30 inches deep and 3 feet wide. To complete the 40-foot spans, the contractor positioned 18-inch-deep and 4-foot-



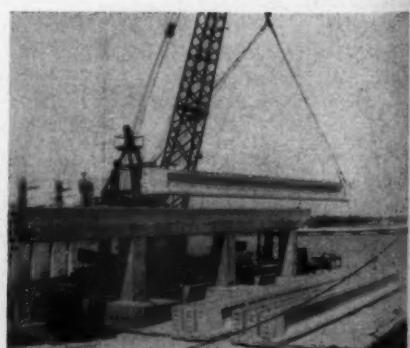
After the tie-beam side forms have been removed, prefabricated steel-backed plywood forms are positioned for the columns.



A barge-mounted Link-Belt crane swings a template over the prefabricated steel-backed plywood forms for the pier cap. The template will position bearing pads for the girders.



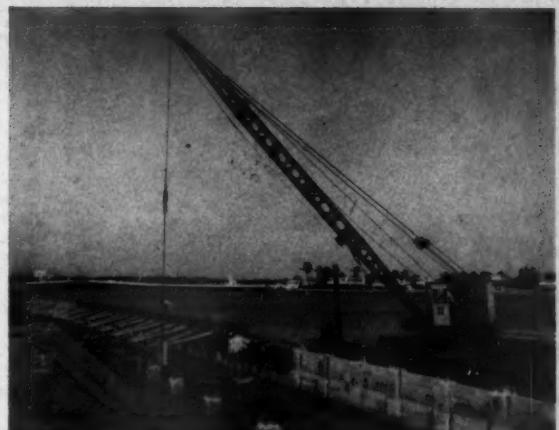
This is the completed pier. Pairs of timbers support steel stringers running on the outside faces of the columns. Stringers support timber wales supporting the form bottoms.



A 65-foot prestressed-concrete girder, delivered by barge, is lifted into place by a barge-mounted 40-ton revolving crane. Sixteen of these 39-inch-deep girders are used per span.



◀ A barge-mounted stiffleg derrick uses a steel template to drive prestressed-concrete piles for piers of the 2,100-foot-long crossing.



This barge-mounted crane is positioning a 3 x 6-foot slab in front of an anchor pile to increase overturning resistance of the bulkhead. The bulkhead wall is formed by tongue-and-groove piles with 7-inch-thick slab panels between them. Anchor arms connect the running cap on the bulkhead wall and the cast-in-place cap of the anchor piles. ▶

wide prestressed-concrete slab sections between caps. These deck panels will be topped with a 4-inch-thick reinforced-concrete surface.

For all the 65-foot spans on 3 pile bents and 14 piers, the contractor is using 16 prestressed-concrete I-beam girders, 3 feet 3 inches deep. The pile bents are similar to those for the 40-foot spans, but they require 24-inch-square prestressed piles 42 to 60 feet in length.

#### Piers cast in place

Each pier consists of four pile clusters of 24-inch-square hollow prestressed piling and four tapering square columns supported on pile-cap footings. The two outside footings have five 24-inch-square hollow piles, while the two inside footings are supported by six prestressed piles driven to refusal.

Each of the four 9 x 14-foot footings per pier is 4 feet thick and was formed with plywood. The bottom sheets were supported on 2 x 6's resting on heavier bracing tied to the piles. The side panels were supported by prefabricated steel frames that allowed complete units to be positioned from pier locations.

After side forms were stripped, two steel stringers, supported by brackets attached to the footings, were used to support the forms for the tie beam running across the tops of the four pier footings.

Concrete for the four pier columns was placed in prefabricated steel-frame plywood forms resting on the tie beam of the pier. Upper steel bracing correctly maintained the proper spacing of the column forms.

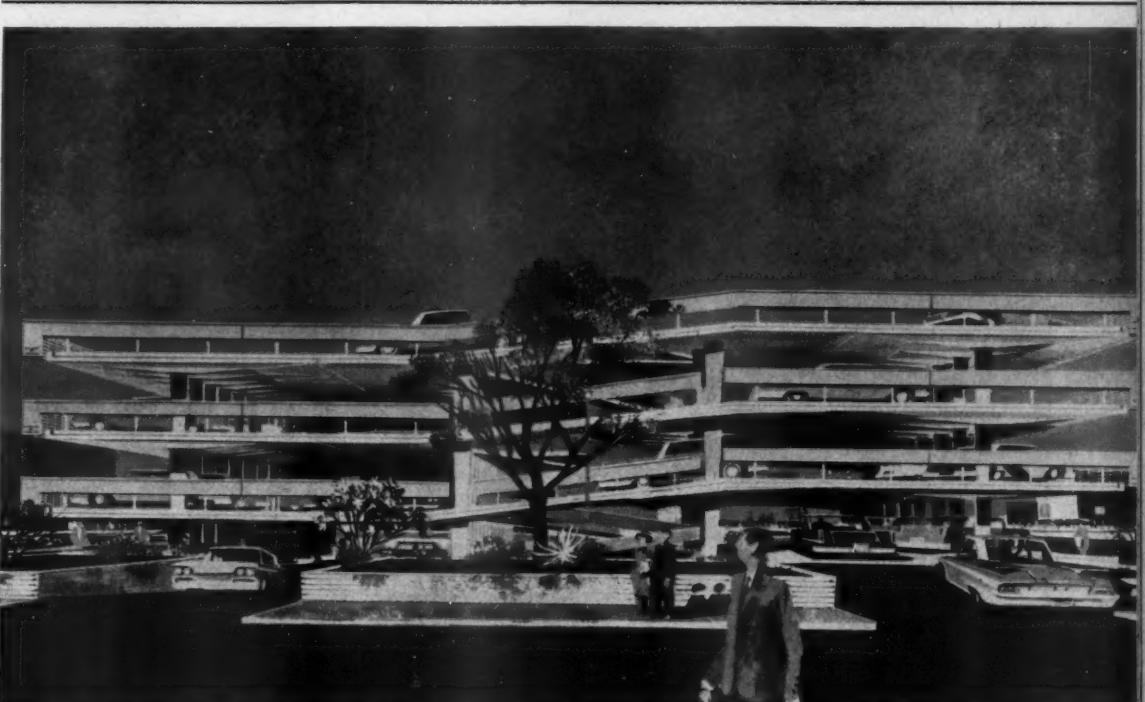
The pier caps, 99 feet 4 inches long and 5 feet deep, were formed by supporting the steel-backed plywood forms on two steel beams on the four columns. These beams were held in place by timbers bolted together around the columns.

#### Cofferdams driven

Two cofferdams were driven to construct the piers at the main channel. Each cofferdam measured 105 x 27 feet and used 40-foot-long interlocking sheet piles. After the bay bottom was excavated inside the cofferdam, a 5-foot-thick tremie seal was placed so that the cofferdam could be unwatered.

This was topped by a 5-foot-thick  
(Continued on next page)

For more facts, use Request Card  
at page 18 and circle No. 303 ▶



\*TIERPARK, a development and product of the Tishman Research Corporation, was designed by Edgardo Contini, Engineer.

## Multi-Story Prestressed Concrete Parking Structure

*Designed for fast erection*

**Self-parking structure requires only three standardized components, mass-produced by concrete fabricators**

TIERPARK is a self-parking type of garage that can be erected quickly because it is made up of standardized prestressed concrete components which are mass-produced and stockpiled at a casting plant. The components are assembled on-site in single or multi-tier combinations by a simple sequence of bolting and grouting.

#### Components are cast by leading concrete fabricators

There are only three primary components of TIERPARK. The typical slab, ramp slabs and typical columns form the entire structural system. No beams or girders are required. And a specially designed rigid connection between columns and slabs does away with the necessity of bracing or shear walls to resist wind or seismic forces. Tishman has licensed over 80 of the country's leading prestressed concrete fabricators to manufacture TIERPARK components.

#### 1200-car TIERPARK uses 120 miles of Bethlehem Strand

Now underway for the Hempstead, Long Island store of Abraham & Straus, a division of Federated Department Stores, Inc., is a TIERPARK with a capacity of 1200 cars. All prestressed concrete members were made by Prefabricated Concrete, Inc., Cedarhurst, Long Island. Tensioning elements consisted of over 120 miles of 7/16-in. stress-relieved strand, manufactured by Bethlehem. Fabricators like Bethlehem strand's easy-to-handle flexibility in the casting bed. And they know that they can rely on its consistent, dependable quality from reel to reel.

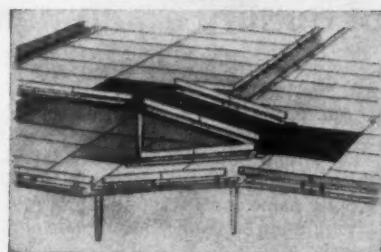
For further details on this new project or information on induction heated stress-relieved strand, write to our Wire Rope Sales Department.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.  
Export Sales: Bethlehem Steel Export Corporation

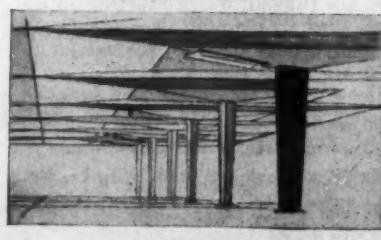
**BETHLEHEM STEEL**



SLAB



RAMP SLAB



COLUMN

\*Trademark of the Tishman Research Corporation—Patent Pending

(Continued from preceding page)



A Tampa self-propelled pneumatic roller compacts earth fill for a causeway approach that has been bulkheaded for protection.

footing, measuring 102 x 24 feet, which supports three pier columns built into an enclosing 36 and 30-inch-thick perimeter wall. These piers will house the mechanisms required to operate the draw spans.

#### Bulkheads installed

Over 1,000 linear feet of bulkhead was installed to protect the earth backfill forming the bridge approaches. Heavy Constructors drove tongue-and-groove prestressed piling on 6 1/2-foot centers to hold the 7-inch concrete slab panels forming the bulkhead wall. The panels were simply

stacked between the piling by lowering them in the grooves.

Running parallel to and 14 feet from the tongue-and-groove bulkhead piles are 18-inch prestressed anchor piles, driven to support the wall. These are on 12-foot 10-inch centers and are further reinforced by a 3 x 6-foot slab, 6 inches thick, welded to the outside vertical surface near the tops of the piles. This was done to obtain additional bearing resistance.

The bulkhead wall was tied back to each anchor pile by casting two 6 x 6-inch prestressed anchor arms into a cast-in-place running cap over the bulkhead, and tying both of them to a cap cast over the anchor pile.

The completed roadway will consist of two 40-foot roadways of 7-inch-thick concrete slabs. A 6-foot raised concrete median will separate the two 3-lane roadways.

J. R. Bailey is the general superintendent and Milton E. Cannon the job superintendent, for Heavy Constructors. Wallace James is the resident engineer for the Florida State Road Department.

THE END



4-cycle  
Short stroke  
Air-cooled

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KOHLER CO. Established 1873 KOHLER, WIS.

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Kohler Co. has manufactured internal combustion engines for 40 years.

#### Electronic system used to survey for pipeline

The task of establishing microwave flow-control stations along a 1,400-mile Pacific Gas & Electric pipeline is being made easier with the use of a Cubic Corp. electronic distance-measuring system. To determine the location of the stations, the device measures distances between proposed sites and the attenuation of a microwave signal over the distances spanned. The system, called Electrotape, consists of two portable transmitter receiver units. Automatically computing the time it takes for a signal to travel from one unit to the other and back, the tool can measure miles in minutes.

The time measurement is read out in digital form to the nearest twentieth of a millimicrosecond. The figure can be converted into inches, feet, yards, miles, or metric units. A helicopter is used to take the crew from place to place. To allow for greatest speed in surveying, the crew is divided into two teams. As soon as one team completes its measurements, the helicopter takes it down the line, jumping over the first. By this method, as many as 300 miles can be charted in one day.

#### Duff-Norton news

Donald J. Wallace, a district sales manager for the Coffing Hoist Division of Duff-Norton Co., Pittsburgh, has new headquarters in Chicago. He had been serving as district sales manager for the division in New York.

Wallace will direct sales activities for the hoists in northern Illinois, northern Indiana, Wisconsin, Michigan, Minnesota, and North and South Dakota.

CONTRACTORS AND ENGINES

# Convention Calendar

## October 3-5 National Association of Corrosion Engineers

Short course, San Francisco, cosponsored by NACE and University of California. Dr. I. Cornet, University of California, Engineering and Sciences Extension, 2451 Bancroft Way, Berkeley 4, Calif.

## October 3-5 National Association of Corrosion Engineers

Short course, University of Oklahoma, Norman, Okla., cosponsored by NACE and University of Oklahoma. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

## October 4-6 Producers Council, Inc.

Meeting, Drake Hotel, Chicago, Ill. Keith R. Belch, 2029 K St. N.W., Washington 6, D.C.

## October 4-7 Ohio Short Course on Foreside Development

Nineteenth annual course, Neil House, State Office Building, and Ohio Union, Ohio State University, Columbus, Ohio. Wilbur Garmhausen, Ohio Department of Highways, 450 E. Town St., Columbus 15, Ohio.

## October 6-7 National Association of Corrosion Engineers

Western Region Conference, Sheraton-Palace Hotel, San Francisco, Calif. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

## October 6-8 National Association of Corrosion Engineers

Southeast Region Conference, Dinkler-Pais Hotel, Atlanta, Ga. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

## October 10-14 American Society of Civil Engineers

Annual meeting, Hotel Statler, Boston, Mass. W. H. Wisely, ASCE, 33 W. 39th St., New York 18, N.Y.

## October 11-14 National Association of Corrosion Engineers

Northeast Region Conference, Prichard Hotel, Huntington, W. Va. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

## October 17-21 National Safety Council

49th annual National Safety Congress, Conrad Hilton and other hotels, Chicago, Ill. R. L. Forney, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

## October 19-20 National Association of Corrosion Engineers

North Central Region Conference, Pilsner Hotel, Milwaukee, Wis. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

## October 25-27 National Association of Corrosion Engineers

South Central Region Conference, Mayo Hotel, Tulsa, Okla. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

## October 31-November 2 American Concrete Institute

Semiannual regional meeting, Pioneer Hotel, Tucson, Ariz. William Maples, ACI, P. O. Box 4754, Redford Station, Detroit 19, Mich.

## November 1-4 American Institute of Steel Construction

Annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va. AISC, 101 Park Ave., New York 17, N.Y.

## November 3-4 National Slag Association

Annual meeting, Hotel Mayflower, Washington, D. C. NSA, 613 Perpetual Building, Washington 4, D.C.

## November 14-15 Prestressed Concrete Conference

Meeting, sponsored by the University of California Extension and Department of Engineering, Biltmore Hotel, Los Angeles, Calif. Dept. of Conferences, University Extension, University of California, Berkeley 4, Calif.

## November 14-16 National Association of Corrosion Engineers

Canadian Region (Eastern meeting), Canadian Region (Eastern meeting),

Sheraton Mount Royal Hotel, Montreal, Que., Canada. T. J. Hull, executive secretary, NACE, 1061 M & M Building, Houston 2, Texas.

## November 14-17 American Bridge, Tunnel and Turnpike Association

Meeting, Atlantic-Sheraton Hotel, New York, N.Y. J. Allyn Stearns, executive secretary, Northcourt Bldg., White Plains, N.Y.

## November 14-18 Short Course on Concrete and Concrete Aggregates

Course, sponsored by National Sand and Gravel Association and National Ready Mixed Concrete Association, University of Maryland, College Park, Md. NSGA-NRMCA, 1411 K St. N.W., 10th Floor, Washington 5, D.C.

## November 21-22 Prestressed Concrete Conference

Meeting, sponsored by the University of California Extension and Department of Engineering, Sheraton-Palace Hotel, San Francisco, Calif. Department of Conferences, University Extension, University of California, Berkeley 4, Calif.

## November 27-December 2 American Society of Mechanical Engineers

Winter annual meeting, Statler Hilton Hotel, New York, N.Y. L. S. Denegar, ASME, 29 W. 39th St., New York 18.

## November 28-December 2 American Association of State Highway Officials

Meeting, Sheraton-Cadillac Hotel, Detroit, Mich. Michigan State Highway Department, Lansing 26, Station A, Mich.

## December 5-7 Associated General Contractors of America

New York State Chapter 35th annual meeting and exhibition, Concord Hotel, Kiamaha Lake, N.Y. Louis G. Blackhall, managing director, AGC, Manager De Witt Clinton Hotel, Albany, N.Y.

## HRB book on road jobs

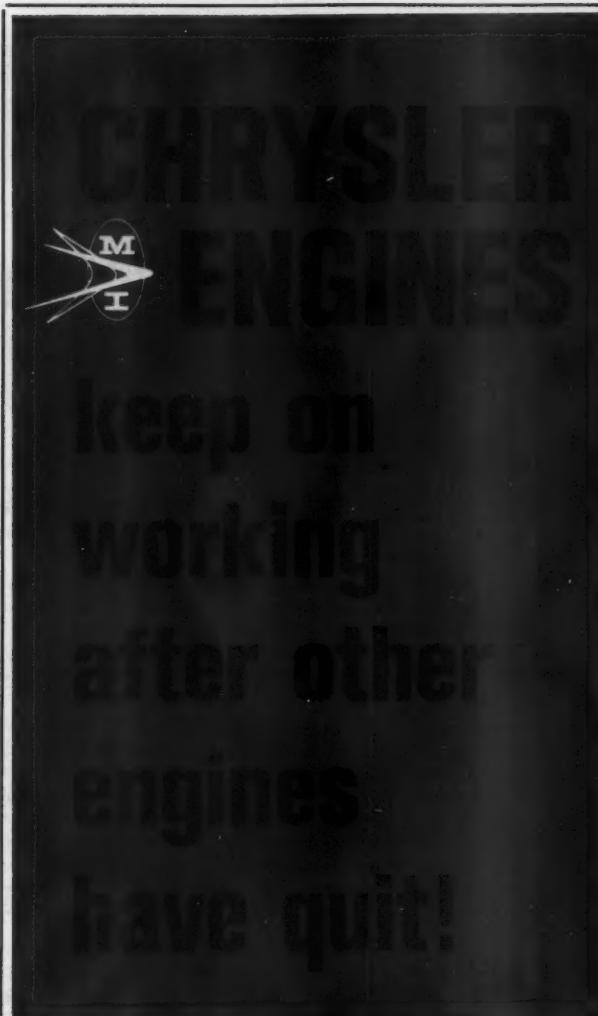
■ "Use of Steel-Tired Rollers and Two-Way Radio on Highway Construction," Bulletin 246 of the Highway Research Board, contains two

papers on these subjects. The one on steel rollers presents some of the history of the rollers and recommendations on their use in pavement work.

Planning, installation, and use of 2-way radio in maintenance and construction operations in the Ohio Department of Highways is covered in the second paper of the 80-cent bulletin. Orders may be placed with the board at 2101 Constitution Ave., Washington, D.C.

## ACSM moves headquarters

■ The American Congress on Surveying and Mapping has set up consolidated central headquarters in downtown Washington. Its new address is Room 430, Woodward Bldg., 1426 H St. N.W., Washington 5, D.C.



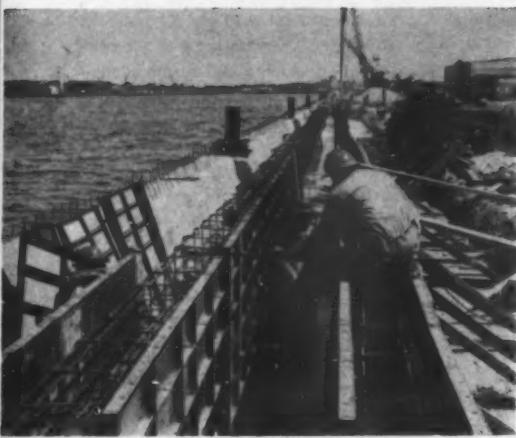
**PROOF:** Jarvis R. Zeeck farms 1,000 acres in West Texas with eight irrigation wells. He says, "The other engines I tried had a bad habit of breaking down when I needed water the most. But my Chryslers set up and run all season without trouble. They just don't wear under the strain like other engines. Last year we irrigated before planting in April and May, then ran the engines continuously—24 hours a day, 7 days a week—from June 15th 'til October 1st. We didn't lose a single day—or even an hour—because of engine trouble."

**CHRYSLER** 

MARINE AND INDUSTRIAL ENGINE DIVISION  
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For more facts, use Request Card at page 18 and circle No. 305



Formwork for walls that will support part of a craneway is done in a small area at Dundalk Marine Terminal, formerly Baltimore's Harbor Airport. The Symons Clamp forming system being used gives workmen advantages in the restricted space, for the panels are easily handled and no side bracing is needed.



Three walls, each 6 feet high, provide support for the rails of the gantry that will serve freighters using the terminal. Panels are in place for the 2-foot addition to the height of the old seawall at left. The next wall supports one rail of the craneway. The middle wall, 37 inches away, provides a second wall for the power trench. The third wall, supporting the inboard rails, will rest on the line of piles at far right.



Workmen easily handle the form sections being placed around reinforcing for the outer wall supporting the craneway. Note the minimum of bracing required for the panels.



Form filler sections do double duty; here the Symons units act as temporary supports for steel girders that will carry the crane rails. Workmen simply connect the girder sections, then slide the steel to the left so that it can be fastened to bolts projecting from the wall.

## Crews building up seawall and constructing concrete support for traveling gantry at Baltimore marine terminal have to

Seaplane skippers who jockeyed their craft through shipping on the Patapsco River and up ramps to Baltimore's Harbor Airport in the 1930's will hardly recognize the place now.

The Maryland Port Authority is converting the long outmoded airfield—which will have one runway in use until January—into efficient wharves for ships, complete with transit and storage sheds, rail sidings, and ship handling and unloading equipment.

The first step in the conversion is being done under a \$2 million contract handled by Empire Construction

Co., Baltimore. It covers raising the height of an existing seawall, installation of foundations, laying of track for a 30-ton traveling gantry that will unload ships, construction of about a mile of access roads and rail tracks, and installation of storm drains for the northern portion of the airport area.

### Raising seawall

One of the biggest jobs was raising and strengthening the seawall to support the gantry. The airfield was built up of sand dredged from the harbor.

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\*Integrity — Quality

More and more purchasing agents are employing a new concept in buying called value analysis. In it the integrity of the seller weighs heavily since it assures maintenance of uniformly high product quality.

Advanced procedures and equipment in Union's foremost laboratory enable our technicians to determine the life expectancy of wire ropes. Much of the time of our engineers is spent in the field checking to see that Union wire ropes live up to or exceed predetermined life expectancy rating under varying operating conditions.

In living with wire ropes and slings from the cradle to the grave, our engineers found new constructions were necessary. On many of the tougher jobs the life expectancy of standard wire ropes of the highest quality was too short. To equip the machines handling these tough jobs with the ultimate low cost wire rope and slings, Union developed the Tuffy family. Each member is a special construction tailored to fit a special purpose. For many years Tuffy's ultimate low cost wire ropes and slings have helped battle the rising cost of operation.

### Tuffy Wire Ropes and Slings Are Tailored For Tough Jobs



**Tuffy Balanced Dragline Rope**



**Tuffy Balanced Scraper Rope**



**Tuffy Balanced Dozer Rope**



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OCTOBER

# Form work in tight spaces

channels; the fill slopes gently downward from a point about 50 feet inshore to a bulkhead under water at the edge of the field. The old seawall, 1½ feet high and of reinforced concrete, was supported on wood piles driven into the harbor bottom. At full tide, there is more than 8 feet of water around the piles. Tops of the piles were tied to a double row of wood piles, further inshore, by 12 x 12 cap timbers that acted as girders to support a decking of 6 x 12 wood planks. These supported backfill to provide a uniform ground level atop the seawall.

This design was satisfactory for the airport, but since it did not provide sufficient strength for use as a wharf by freighters or a heavy crane, a number of changes were called for by the port authority's consulting engineering firm, Turpin, Wachter & Associates, Baltimore.

The seawall is being raised by 2 feet, and 2,100 new piles—a quarter of them concrete-filled Monotubes—are being driven about 70 feet to firm bearing for some 1,200 feet along the north side of the airport. The piles will support an 18 to 24-inch-thick

reinforced-concrete slab that replaces the old decking as a tie between seawall and solid fill and supports part of the craneway. The craneway consists of three parallel reinforced-concrete walls, of varying thickness, that will support the rail and crane and enclose a third rail for the gantry.

## Pile driving

Pile-driving work was relatively easy, for the dredged material making up the fill was free of obstructions. The existing piles could not be disturbed, however, for they are included

in the new design. The old decking was used as a working platform, although parts of it were removed where necessary to clear space for the new piles. When driving had been completed in one area, the remainder of the decking was removed but the timber caps were left in place. These were used as stringers to support the wood forms, fabricated on the site, that served as the bottom forms for the new concrete slab.

The line of steel tube piles running along the inshore edge of the area are capped by a 24-inch-wide wall. These piles had to be driven within a tolerance of less than 4 inches from center; actually, none of them is more than an inch out of line.

## Restricted space for forming

The concrete work posed many more problems than the pile driving. The three 6-foot-high reinforced-concrete walls that provide support for the craneway had to be formed within a working space of some 39 feet, measuring inshore from the existing seawall. Each wall is 1,200 feet long, with an additional 200-foot curved section at the outer or west end.

Near the seawall is a rectangular reinforced-concrete wall 6 feet high and 24 inches thick, which supports the outer crane and girder rail. Adjacent to it, a 37-inch space is left for the power trench. Another 6-foot wall, 15 inches thick, forms the second side of the power trench. The third wall, 24 inches thick at the top and sloping outward to 3 feet at the base, supports the inboard crane and girder rail. The area between the second and third walls will contain backfill that will carry rail tracks.

Forming was the critical problem in wall construction. Empire used Symons prefabricated panels for the work, which had to be done in tight quarters, and yet required perfectly aligned forms so that there would be no trouble when installing rails for the craneway. Some 6,300 feet of these self-aligning forms, with their patented connecting devices, were in use at one time. Sections were easily handled by one workman, attachment was simple, and a minimum of skilled carpenter time was required by the work. All this eased the work of erection, stripping, and storage. The only bracing required was the double 2 x 4 wales at the tops and bottoms of the forms; no side bracing was needed. The forms were particularly valuable in work on the tapering edge of the buildup on the seawall and the curving sections of the walls.

The form panels also made handy temporary walkways for workmen and temporary supports for the steel girders, which were laid across the tops of panels in the relative position they were to take in the completed work. In this position, they were assembled and moved a few inches sideways, ready for installation.

THE END



Wire ropes travel hundreds of ton-miles on rotary oil drilling rigs lifting and lowering drill pipe and tools out of and into the hole. On the world's deepest oil well Tuffy Rotary Line handled the longest string of well casing ever run. The final live load totaled 700,000 lbs.



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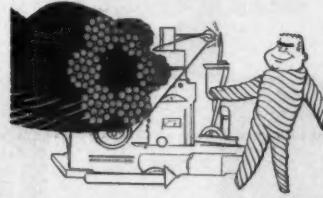
They know from experience that they can serve you with quality backed by integrity and enjoy a high expectancy for your repeat business. Look up your Union Wire Rope distributor in the yellow pages of your phone book. He is coached in helping you before and after the sale. Backing him up is an expert staff at a nearby Union Wire Rope branch office and warehouse.

## Tuffy Wire Rope Tips



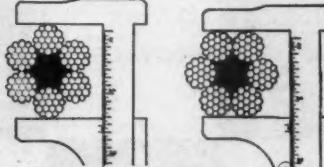
Money-Saving Information on the Use and Care of Wire Rope

Wire Rope is a "Machine" of Moving Parts



...and every part must fight destructive forces! A "look inside" a section of wire rope reveals a precision assembly of working parts. They are subjected not only to external and internal stresses, but also to heavy surface pressures and abrading. All these forces may be sustained while the rope is running at high speeds, and abruptly changing direction. That's why different uses require different constructions of wire rope.

### How to Measure Rope Diameter



There's only one right way: Use machinist's calipers, and be sure to measure the widest diameter. A slight shift of the rope in the calipers (shown at right above) might cause ordering an undersize rope.

### How to Measure Tread Diameter



Easy, and important. Select the smallest sheave or drum to be used with the new wire rope, and measure actual diameter at lateral center (shortest dimension) of tread.

Would you like a copy of a booklet in which more than a score of Tuffy Tips like those above are reproduced? If so, write Union Wire Rope Corporation, 2260 Manchester Ave., Kansas City 26, Missouri.

**UNION** Wire Rope



3-C

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For more facts, use Request Card at page 18 and circle No. 306

Tuffy Balanced Rings and Hoist Lines



A Glynn Concrete Co. policy:

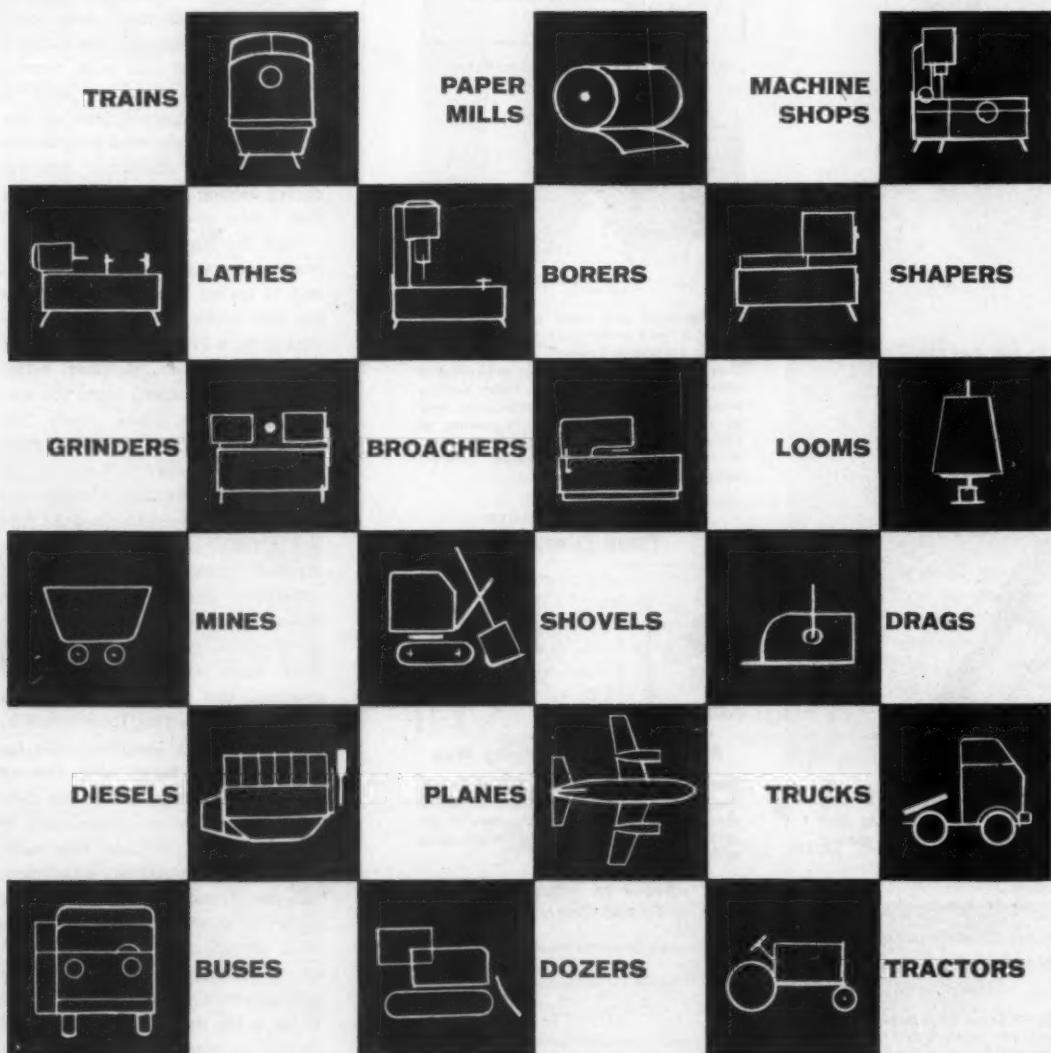
## Update a ready-mix plant

Contractors and Engineers staff article

The original concrete batch plant of Glynn Concrete Co., Brunswick, Ga., still in place, has been modernized to make it a one-stop plant. The latest addition: a 24-inch inclined conveyor with a 250 to 300-tph capacity, and a single 1,000-barrel cement silo. The two old silos will be removed.



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For more facts, use Request Card at page 18 and circle No. 307

Contractors and Engineers staff article

A ready-mix plant of Glynn Concrete Co., Brunswick, Ga., continually modernized over the years to make production more efficient, now boasts a cement silo and conveyor system that, together with a centralized control system, make truck charging a one-stop operation.

The original plant consisted of two cement silos, having an 800-barrel capacity, to charge the cement into the transit-mix trucks. This required a two-stop operation and, naturally, slowed down the flow of trucks. These silos have been replaced by a single 1,000-barrel silo fabricated by the Merts Equipment Co., Albany, Ga.

The original 125-ton 3-compartment aggregate bin has been incorporated into the modernized plant.

A 24-inch-wide conveyor, rated at 250 to 300 tph, has been installed to transfer sand and gravel from the undertrack hoppers of the railroad siding. Cement is also delivered and stored in rail cars, and it is transferred to the new silo by means of an undertrack hopper, screw conveyor, and enclosed bucket elevator. Another screw conveyor is used to transfer the cement from the elevated 1,000-barrel silo to the weigh batcher to provide the one-stop operation.

Two weigh batchers, one for cement and one for the sand and gravel, are housed within the aggregate-bin enclosure.

### Auxiliary stockpiles

Glynn Concrete also maintains auxiliary stockpiles of sand and gravel. This takes up any slack that develops between rail shipments of aggregates.

A Hough Payloader charges the conveyor hopper when this stockpiled material is needed. The front-end loader also pulls and positions the rail cars over the undertrack hoppers.

### Remote controls

The concrete plant is equipped and operated by remote controls that are housed in a control tower set off about 50 feet from the plant. This semi-automatic system, built by Superior Steel Fabricators, Inc., Atlanta, Ga., uses push-button controls. Each of the activating push buttons must be pushed and held down while cement, sand, or gravel is loaded into the weigh batchers.

Two Toledo scales are used—one for sand and stone, the other for cement. One is located on each side of the control console for easy viewing by the plant operator. When one button is pushed, weigh batchers are loaded; the second button is pushed to release the contents of the weigh batchers into the transit-mix trucks.

Water for each ready-mix batch is

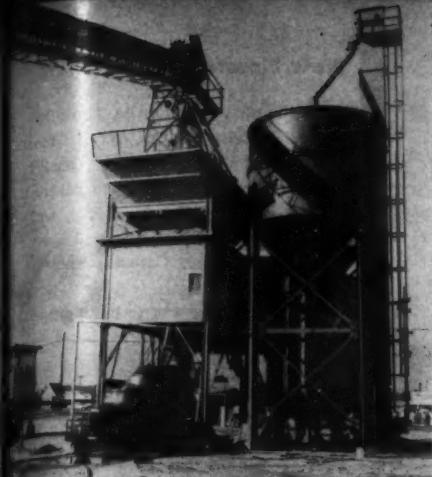
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◀ The new 1,000-barrel cement silo, located adjacent to the rail spur, is charged by means of an enclosed bucket elevator. A screw conveyor under the silo transfers cement to the plant's weigh batcher.



The efficient control tower has radios, measuring devices, and air conditioning. The semiautomatic control panel was built by Superior Steel Fabricators, Atlanta, Ga. Two Toledo scales, for aggregate and for cement, are on either side of the operator. A Neptune automatic valve meter, near the Motorola radio, measures and controls the flow of batch water. ▶

dispensed through a 2-inch double-rip automatic valve meter, manufactured by the Neptune Meter Co., New York, N. Y. This meter automatically stops the flow of water after the required amount has been charged into the ready-mix truck.

For this operation, the desired amount of water is key-punched into the meter and the valve is opened. When the exact quantity of water is dispensed, the flow is automatically shut off.

#### Rolling stock

The expanding ready-mix and concrete-block company owns twelve transit-mix trucks—Rex, Smith, and Jaeger mixers on Mack or International Harvester trucks—that service all of Glynn County, plus the major part of the surrounding counties. A branch office and plant in St. Mary's, Ga., handles the counties south of Glynn.

Transit-mix trucks are equipped with GE or Motorola mobile radios to tie them to the control tower. A Motorola base station at the plant's office and tower controls all the movements of the trucks. The use of the radio hookup permits rerouting of trucks from one destination to another; early notification of a completed delivery; a call for additional concrete at a job site; and calls for emergency assistance.

At present, the plant has a capacity of about 70 cubic yards an hour. This production will be increased by speeding up the cement-transfer screw—either by replacement or modification—thus decreasing the weigh cycle of the plant.

H. L. Friedman is the vice president and general manager of Glynn Concrete, R. M. Stephens is general superintendent, and Tom Gash is sales representative. THE END

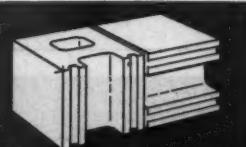
#### Nevada department forms new highway district

The Nevada Department of Highways has organized a sixth highway division with headquarters in Winnemucca. Formed from the northeastern portion of Division Two and the western portion of Division Three, the new administrative and maintenance district includes parts of Elko, Lander, Pershing, and Churchill counties and all of Humboldt County.

The area has been put under the supervision of Dale Rose.

OCTOBER, 1960

## ► Great new things are shaping up in concrete block



Wall designed by Architect Alfred B. Parker, Miami. Photo courtesy of National Concrete Masonry Association.

## Atlas Masonry Cement provides the right mortar

A notable thing about the new look in concrete masonry is what is being done with standard block. Here, for instance, a closed-lattice effect is achieved by laying up "stretcher" type concrete block, so that the ends are exposed. This basket-weave pattern creates an interesting exposed masonry wall resembling hand-hewn stone. For laying up this block, or any concrete masonry unit, ATLAS MASONRY CEMENT continues to be the preferred cementing material in mortar. It produces a smooth, workable mix, provides a strong bond, gives weathertight joints that are uniform in color. And ATLAS MASONRY CEMENT complies fully with ASTM and Federal Specifications. For information on masonry cement write: Universal Atlas, Dept. M, 100 Park Avenue, New York 17, N. Y.



Universal Atlas Cement  
Division of  
United States Steel

M-81  
"USS" and "Atlas" are registered trademarks

OFFICES: Albany • Birmingham • Boston • Chicago • Dayton • Kansas City • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh • St. Louis • Waco

For more facts, use Request Card at page 18 and circle No. 308

THE COST OF OPERATING a dozer or dragline for spreading excavated material is being saved by the contractor on the new vehicular tunnel under the Intracoastal Waterway at Houma, La. While this Mack truck makes its dump from a ramp, a jet of water pushed through a line by a 2-inch pump spreads the material. A dragline is needed only about every third day to clear the dump area near the ramp.



## THE SMITH MIXER

Custom-Built to Your Specification!

Why settle for a truck mixer that only "partly" matches your operating requirements? You can get a custom-built Smith Mixer . . . tailored to your own specs . . . at standard prices. You do this by picking from the widest choice of mixer options — many available only from T. L. Smith.

Best of all, you get Smith's new torsion-bar design that s-t-r-e-t-c-h-e-s wear life of all components — and still contains the famous Smith drum: unchanged, and unsurpassed — proved in test after test to be the world's best concrete mixer. See one . . . try one . . . at your Smith distributor. The T. L. Smith Company, Milwaukee, Wis., and Lufkin, Texas. Affiliated with Essick Manufacturing Company, Los Angeles, California.



For more facts, use Request Card at page 18 and circle No. 309

### New Firestone plants

■ In the next few months, The Firestone Tire & Rubber Co., Akron, Ohio, will open four new plants. One in Orange, Texas, will produce rubber, and a plant in Hopewell, Va., will make nylon. Tire plants will open in Calgary, Alta., Canada, and in Bethune, France.

Plans are under way to build a new synthetic-rubber-producing plant in Port Jerome, France, and a 3-plant synthetic-rubber complex in Bareilly, India.

The plants will bring Firestone's total to 75 and are part of a \$120 million expansion and modernization program undertaken during the company's 60th year.

### Parker-Hannifin appoints manager for new region

■ Willard E. Anderson has been named by Parker-Hannifin Corp., Cleveland, Ohio, to the newly formed post of regional manager for the eastern central area of the country, comprising Ohio, Indiana, Kentucky, West Virginia, and western Pennsylvania.

From headquarters at the sales office in Cleveland, he is supervising direct-sales engineers and district managers of distributor sales in his area. These men handle the products of the Parker Hydraulics and Parker Fittings and Hose divisions in Cleveland and the Hannifin Co. Division in Des Plaines, Ill.

Anderson was previously district manager of distributor sales in Wisconsin, Minnesota, and Iowa.

The new sales manager for the Parker Fittings & Hose division is A. N. Aiman. He was previously Detroit district manager for Parker Seal Co., another company division.

### Yale division names

■ Pacific Lift Truck Co. has been appointed exclusive representative in southern California by the Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia. In this capacity, the West Coast firm has assumed management of the former Los Angeles branch of Yale & Towne at 5711 E. Olympic Blvd., and of the San Diego sales and service location at 4410 Kearny Mesa Road. Sales and service will continue, uninterrupted, from both facilities.

The appointment is in line with Yale & Towne's policy of strong local and regional representation. Pacific Lift Truck, headed by Horace H. Fritz, III, will cover 10 counties in southern California.

### Ramset representative

■ Warren Duggan Sparks has been named district sales representative in the Los Angeles area for Ramset Fastening System, New Haven, Conn., a part of Winchester-Western Division, Olin Matheson Chemical Corp. The firm produces powder-actuated fastening tools, hammers, and assorted special units for fastening into concrete or steel.

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## PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

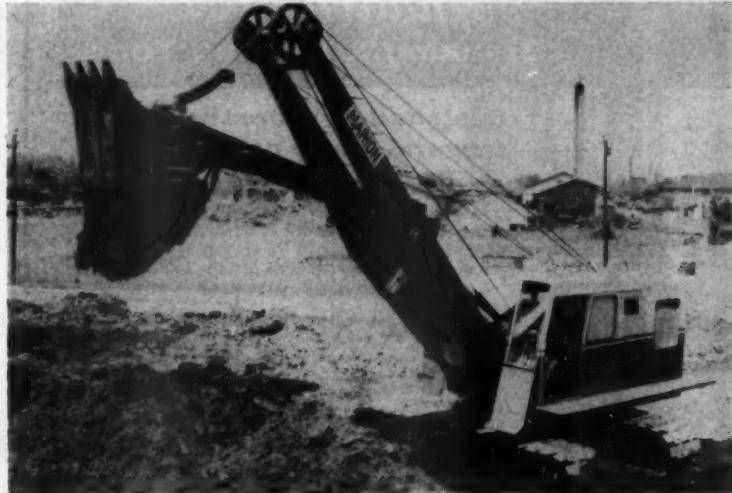
### Add five new units to crane-excavator line

The addition of five new crane-excavators to its product line has been announced by the Marion Power Shovel Co. They range in crawler-crane ratings from 30 to 75 tons and in shovel capacities from  $1\frac{1}{4}$  to  $1\frac{3}{4}$  cubic yards. The model number designations are 45-M, 47-M, 65-M, 75-M, and 77-M.

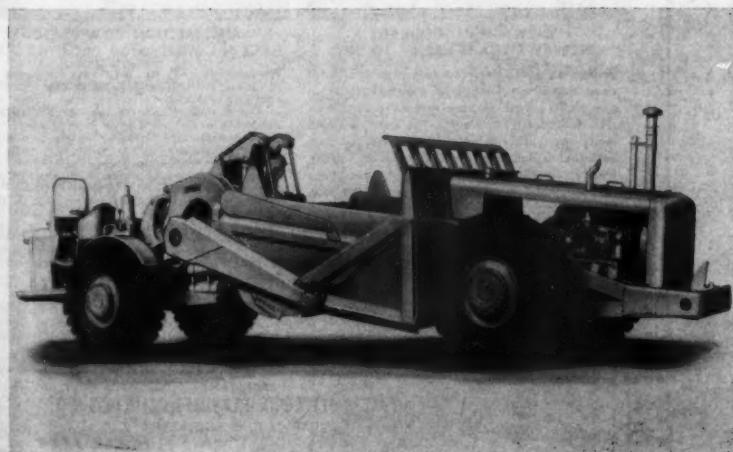
Wide ranges of axle widths, crawler side-frame lengths, and crawler belt widths permit users to select combinations to meet a wide variety of flotation and lifting radii problems. The crawler side-frame and axle designs permit convenient removal of the side frames as units for shipment.

Crane models feature capacities of 30, 40, 50, 60, and 75 tons, with boom and jib maximum combinations from 115 to 200 feet. The new units include drag and clamshell capacities to  $2\frac{1}{2}$  yards, hoe capacities to  $2\frac{1}{4}$  yards, and shovel capacities of  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ , and  $1\frac{3}{4}$  yards.

For further information write to the Marion Power Shovel Co., Dept. C&E, Box 505, Marion, Ohio, or use the Request Card at page 18. Circle No. 64.



### New twin-power scraper has 14-yard capacity



A new twin-power scraper of 14 yards struck capacity and 20 yards heaped is offered by the Euclid Division of General Motors Corp.

Designated Model TS-14, this all-wheel-drive scraper is powered by two GM 4-71 engines, each with a separate Allison Torqmatic drive consisting of torque converter and 4-speed semiautomatic transmission. Tires are  $24.00 \times 25$ . Two hydraulic jacks provide full 90-degree steering.

All scraper operations are hydraulically and independently controlled. The ejector is of the positive roll-out type actuated by a hydraulic jack that is identical to the apron jack. Cutting edge consists of four sections that are identical and reversible.

The all-wheel drive is said to give this new scraper a wide range of usefulness for small jobs such as secondary road construction, soil conservation, stripping, and general grading, as well as for medium and big high-production earthmoving jobs.

For further information write to the General Motors Corp., Euclid Division, Dept. C&E, 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 75.

# CURE CONCRETE IN THREE DAYS!

Now! Cut curing time a full week...use FULCO CURING MATS! They use less water...stay wetter longer...increase compressive strength of concrete...insulate against severe temperature changes...produce a more uniform job! Fulco Cotton and Burlap curing mats may be re-used again and again. Write for complete information and prices.

**FULTEX® AND SHUREDRY® TARPS**  
FOR EVERY CONSTRUCTION JOB.  
Buy direct from Fulton and save.  
Standard sizes and weights in stock  
for shipment—or made to your specifications. Also nylon tarps. Write for prices.

For more facts, use Request Card at page 18 and circle No. 310



P. O. Box 1726, Atlanta 1, Georgia  
Telephone MUrray 8-1111 TWX: AT 24

# VULCAN

*"standard"*

## Breaking & Digging Tools

### designed for increased power & faster production —

Any project hits paydirt with Vulcan's standard line of pavement breaking and clay digging tools. Whether it's the standard moil point, demolition chisel, asphalt cutter or rock breaker just to name a few of the types available, you are insured of powerful modern hammers transmitting full power into effective work value.

Why? Because Vulcan is constantly aiming to produce tools of new and better design, giving customers best obtainable service and satisfaction.

And — absolute dependability and durability are incorporated into every tool at the lowest possible cost. Also available are digging chisels, round and square dirt tampers, sheathing drivers, clay spades, pipe drivers and many others. Whichever you require, always choose Vulcan for the job. Remember, Vulcan tools are "tougher than the task".

#### ALSO SPECIFY — VULCAN FOR:

- Drill Steels
- Chipping Hammer Tools
- Electric Hammer Tools
- Hand Tools for Concrete, Stone and Steel Workers



## VULCAN TOOL MANUFACTURING COMPANY

41 Liberty Street, Quincy 69, Massachusetts

Specialists in the Design and Production of Pneumatic Tool Accessories  
For more facts, use Request Card at page 18 and circle No. 311

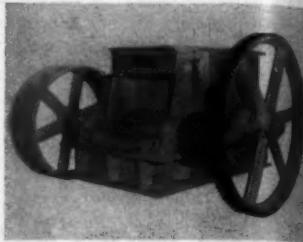
## Product Parade—THESE PRODUCTS CAN HELP WIDEN YOUR PROFIT MARGIN

### Single-roll crusher offers many features

The Pennsylvania Crusher Division of the Bath Iron Works Corp. offers a new Atlas single-roll crusher for handling such materials as shale, lime, and phosphate rock.

Used as primary or secondary crusher in continuous production lines, the Atlas reduces product size to maximum dimensions of 1½ to 8 inches. It is available with roller diameters of 18, 24, or 30 inches to handle feeds up to 26 inches thick.

This new model incorporates such design features as (1) a contoured breaker plate to take the large feed sizes without clogging; (2) simple, trouble-free adjustment of breaker plate by shims to set product size; (3) automatic toggle and torsion-spring safety release to prevent damage from hard, uncrushable matter; (4) drive shaft located in back of the breaker plate, thereby lowering roll-shaft bearing stresses; and (5) spherical antifriction roller bearings mounted



in split housings outside the crusher frames where they are easily lubricated and inspected.

Teeth of various heights are arranged in patterns to meet particular crushing requirements. They can be replaced or built up by welding without removing the roll from the crusher.

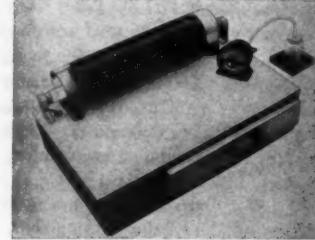
For further information write to the Pennsylvania Crusher Division, Bath Iron Works Corp., Dept. C&E, 323 S. Matlock St., West Chester, Pa., or use the Request Card at page 18, Circle No. 175.

### Dry-process duplicator is low-cost unit

The new Copymaker duplicating machine is a dry-process duplicator said to be economical enough for even the smallest office. It copies anything translucent, such as typed letters or reports, engineering drawings, tracings, sketches, charts, maps, or graphs.

Duplicating with the Copymaker is a simple, 2-step operation, according to the manufacturer. There is no negative; the machine makes accurate, clear copies directly from the original. Since it develops by the dry process, there are no chemicals to mix, no messy trays, and no drying problems for the finished copy.

The machine employs ordinary diazo-type dry-printing paper. Reproductions are possible in any color,



or several colors, and in any size up to 11 x 17 inches. The Copymaker weighs less than 15 pounds. It plugs into any standard 110-volt ac outlet.

For further information write to the Copymaker Co., Dept. C&E, 3597 Lee Road, Cleveland 20, Ohio, or use the Request Card at page 18, Circle No. 15.

## TRIAL SAMPLES Of World-Famous WHITMORE'S Lubricants



### OPEN CHAIN LUBRICANT INCREASES CHAIN LIFE UP TO 300%

Penetrates, lubricates, prevents rust. Lubricates deep into chain linkage to reduce friction on pins, rollers, bushings, pressure surfaces. Corrosion inhibitor prevents rust in vital working mechanisms. Lubricates close-tolerance internal surfaces to increase chain life up to 300%. Highly recommended for all climatic conditions to stop rust and corrosion even in salt atmospheres.

Packaged in handy 14½ oz. cartridges for handy application with lever-type cartridge gun for constant protection to roller, ball, sleeve bearings, and sliding surfaces in "hot" bearing applications or in areas with high ambient heat. Exclusive formulas have no melting or dropping point; moisture resistant; will not wash out; exceptional metal adherence properties; penetration and adhesion qualities; high extreme pressure values. Available in two grades. Whitmore's Anti-Friction Composition No. 1 (light density), recommended for high speed, high temperature applications. Anti-Friction Composition No. 2 (heavy density), for low-speed high-temperature applications or loosely-fitted bearings. Specify No. when requesting free trial sample.



### ANTI-FRICTION COMPOSITIONS HAVE NO MELTING OR DROPPING POINT

Packaged in 14½ oz. cartridges for handy application with lever-type cartridge gun for constant protection to roller, ball, sleeve bearings, and sliding surfaces in "hot" bearing applications or in areas with high ambient heat. Exclusive formulas have no melting or dropping point; moisture resistant; will not wash out; exceptional metal adherence properties; penetration and adhesion qualities; high extreme pressure values. Available in two grades. Whitmore's Anti-Friction Composition No. 1 (light density), recommended for high speed, high temperature applications. Anti-Friction Composition No. 2 (heavy density), for low-speed high-temperature applications or loosely-fitted bearings. Specify No. when requesting free trial sample.

#### 68 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dripper Sticks, Cams
- Enclosed Gear Cases
- Open and Enclosed Chain
- Roller, Ball and Sleeve Bearings
- Speed Reducers
- Hydraulic Units, Torque Converters
- Wire Rope and Cable



THE WHITMORE MANUFACTURING CO.  
LUBRICATING ENGINEERS

CLEVELAND 4, OHIO

VULCAN 3-7272

For more facts, use Request Card at page 18 and circle No. 312

CONTRACTORS AND ENGINEERS

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## Product Parade—YOUR HEADQUARTERS FOR INFORMATION ON NEW EQUIPMENT AND MATERIALS

The Pushin'-Cushin' allows the push block to snap out as the scraper pulls away, and cushion back as the pusher picks up the scraper on the move.

## Device for tractors reduces shock damage

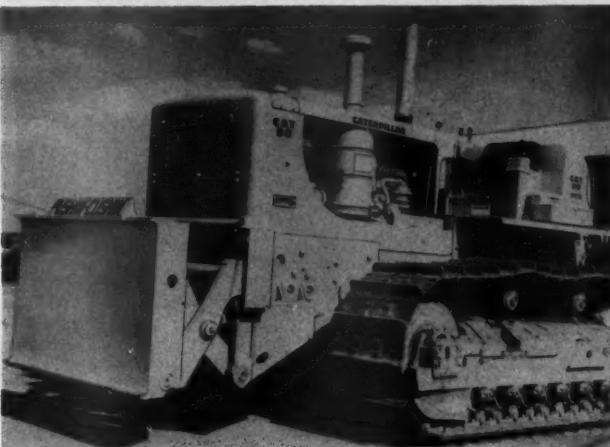
Damaging shock to earthmoving equipment can be substantially reduced with the mounting of a Pushin'-Cushin' to Caterpillar D8 or D9 tractors.

The heart of Pushin'-Cushin' is an automatic self-contained hydraulic cylinder, operating without pumps, hoses, or other troublesome mechanisms.

The multiple-action cushion of the

hydraulic cylinder allows the pusher tractor the freedom of shifting up or down without shock. The push block snaps out as the scraper pulls away, and cushions back as the pusher picks up the scraper on the move.

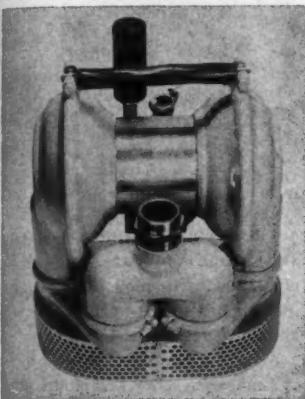
For further information write to Pushin'-Cushin', Inc., Dept. C&E, Box 207, Perry, Kans., or use the Request Card that is bound in at page 18. Circle No. 83.



## New diaphragm pump delivers 6,300 gph

A new model, the DA-4, has been added to the Layton line of pneumatic diaphragm pumps. The new unit is reported to be one-man portable, compact, and quiet in operation. It is fireproof and leaves no odors, gases, or fumes.

The 2-inch pump is self-priming and ejects fluids with a high per-



centage of solids and highly abrasive liquids. It may be submerged in liquid or used with suction hose.

The Model DA-4 is 21 inches high, has a maximum length and width of 16 1/4 inches, and weighs 79 pounds. It consumes only 20 cfm of air at 100 psi, delivers 6,300 gallons per hour at a 10-foot discharge head, and pumps against heads of 100 feet or more, according to the manufacturer.

For further information write to the Layton Co., Inc., Dept. C&E, 4749 S. Whitnall Ave., Cudahy, Wis., or use the Request Card at page 18. Circle No. 13.

## Land-clearing rakes offered for tractors

Drott land-clearing rakes are now available for all sizes of International Harvester bulldozer and bulldozer tractors from the TD-9 through the TD-25 sizes. They are designed for cable or hydraulic operation.

The teeth, which are replaceable, are cast of manganese molybdenum steel.

For further information write to the Drott Mfg. Corp., Dept. C&E, 3126 S. 27th St., Milwaukee 15, Wis., or use the card at page 18. Circle No. 71.

*"It takes more than one strong point to make a champion."*

**Drop Forged Heat Treated Selected Steels**

**CHAMPION SNATCH BLOCK**

**FEATURES EXTRA STRENGTH AT ALL FOUR CRITICAL POINTS**

**CENTER PINS AND BEARINGS EXTRA LARGE TO CARRY RATED LOADS—ALEMITE LUBRICATION**

**BE SPECIFIC BUY McKISSICK!**

*The Best Snatch Block For Your Purpose . . .*

# McKISSICK

McKISSICK PRODUCTS CORPORATION

Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 813



Universal's new 4030 portable roll crusher secondary turns out up to 5,600 yards of aggregate in a 10-hour day.

### High capacity is feature of new crusher plant

Up to 5,600 yards in a 10-hour day, crushing down to 1 inch minus, is average production for Universal Engineering Corp.'s new 4030 portable roll crusher secondary plant, according to the manufacturer.

The big roll crusher with 40-inch-diameter x 30-inch-wide rolls literally pours out the aggregate, while its huge 5 x 14-foot 3-deck Screenmaster teammate provides the scalping and finished screening action necessary for high capacity, Universal reports.

Featured in the 4030 roll crusher is a hydraulic adjustment mechanism that is said to facilitate changing roll

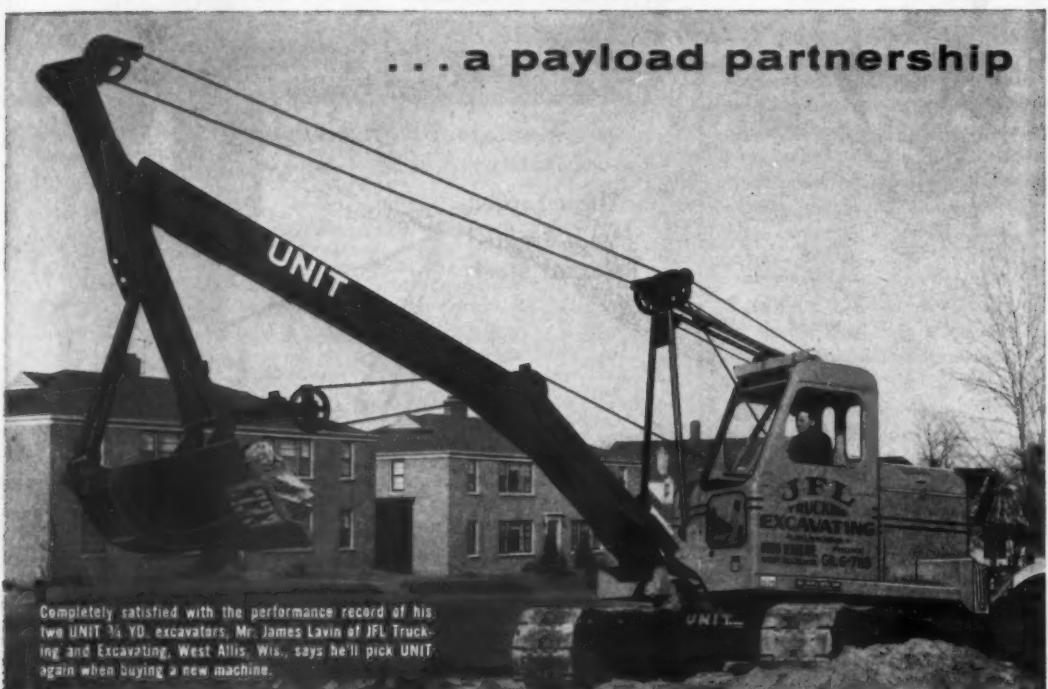
spacing and spring tension. With this hydraulic ram in place and a few strokes of the hydraulic pump, the springs are depressed and spacers can be quickly inserted or removed to increase or decrease tension.

The entire unit is mounted on an I-beam gooseneck frame. Additional side delivery conveyors and feeders are available as options.

For further information write to the Universal Engineering Corp., division of Pettibone Muliken Corp., Dept. C&E, 620 C Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 27.

## You and UNIT earning power

### ... a payload partnership



Completely satisfied with the performance record of his two UNIT 1/4 YD. excavators, Mr. James Lavin of JFL Trucking and Excavating, West Allis, Wis., says he'll pick UNIT again when buying a new machine.

Buying major construction equipment is almost like marriage — you'll live with your choice a long time. That's why it's important to choose the bigger *earning power* of a UNIT excavator or crane. You'll find that your equipment investment will pay off with fast cycle speeds, big output and more dependable performance than other machines in the same size range. You and your UNIT will have a true *payload partnership*.

Fast work on the job — lowest operating cost — negligible downtime . . . these are but some of the reasons why the *earning power* of a UNIT lets you knock out the competition at bid letting time. You win more contracts with a combination of job-proved features, finest quality components and unmatched workmanship.

Features like UNIT'S exclusive one-piece cast

main machinery gear case that completely encloses all gears and shafts in a constant bath of lubricant . . . eliminating frequent adjusting or greasing. UNIT offers straight-in-line mounting of the engine with the main machinery to give longer machine life and perfect alignment of all working parts. All disc-type operating clutches are interchangeable . . . can't grab or self-energize. The exclusive automatic traction brakes on crawler machines assure positive, safe braking power . . . even on the steepest grades. Long, wide-spread crawlers and a big, heavy carbody provide the solid working base you need to get full dippers in the toughest material.

You can start on the road to your *payload partnership* right now by calling your UNIT dealer. He's got the detailed information you need on the 5 UNIT convertible crawler machines, 4 UNIT convertible truck cranes and 2 UNIT mobile cranes.



SHOVELS

HOES

1/2 to 3/4 YDS. 1/2 to 3/4 YDS.

CRANES

DRAGLINES

5 1/2 to 40 TONS 1/2 to 3/4 YDS.

For more facts, use Request Card at page 18 and circle No. 314

### Sleeve clamps for joints in hydraulic lines

A new, easily-mounted chain sleeve clamp for attaching rubber sleeve at hydraulic pipeline joints is offered by the Black Bros. Co., Inc.

The heavy-duty clamp, said to have extensive application in dredging operations, consists of a triangular



shaped head cast of malleable iron, a 1-inch-high carbon-steel screw, a swivel handle, and an electric-welded chain welded to one end of the screw and hooked to the head of the other end. The hook is a steel forging.

A few turns of the swiveled handle draws up the screw and chain, applying adequate pressure to secure the rubber sleeve.

The clamp can be attached or detached in a moment. One size clamp serves all sizes of pipe, from 6 to 30 inches ID.

For further information write to the Black Bros. Co., Inc., Dept. C&E, Mendota, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 37.

### Rubber safety caps for steel pins

Rubber safety caps for steel pins or gads are available from the Carson Co.

According to the manufacturer, the end surface of the pin is covered by the hammer at the moment of contact, while the sides are covered by this rubber-collar safety device. This is designed to contain particles that might otherwise be projected outward, causing possible injury.

Each device is said to last from four to six months under normal usage in average rocky terrain.

For further information write to the Carson Co., Dept. C&E, 5025 Lovell, Fort Worth 7, Texas, or use the Request Card at page 18. Circle No. 67.

Introduce 9-ton trailer for hauling smaller rigs

A new addition to its line of utility trailers has been announced by Talbert Trailers, Inc. Designated the T3D-9 Utility, the unit is recommended for hauling all smaller contractor equipment. Rated capacity is 9 tons.

The T3D-9 features a heavy-duty jack leg for fast, one-man hitching. An adjustable lunette eye or ball hitch is provided to facilitate installation with a variety of vehicles.

Standard specifications include a 16-foot x 67-inch deck; 18-inch

loaded deck height; Fayette 6-spring, 21,000-pound-capacity suspension; electric brakes; Goodyear cast-spoke wheels and rims; six 12-ply tubeless tires; heavy-duty jack leg; 2-inch longitudinal oak and fir flooring; and ICC lights, directionals, and reflectors. The trailer is sandblasted, primed, and finish-painted.

For further information write to Talbert Trailers, Inc., Dept. C&E, 7950 W. 47th St., Lyons, Ill., or use the Request Card at page 18. Circle No. 9.



Talbert Trailers' Model T3D-9 Utility trailer features a 9-ton rated capacity and is recommended for hauling all smaller contractor equipment.

Unit controls tail gate from operator's cab

Dump-truck operators may now operate tail-gate locks from the cab under vacuum control with the new vacuum tail-gate control No. 11R-1 offered by Velvac, Inc.

This unit is especially designed for simple attachment to dump trucks with hydraulic brakes. Particularly useful where gravel and other materials must be dumped in accurately measured quantity, it permits opening the tail gate gradually as required by load weight, truck-body angle, and moving speed.

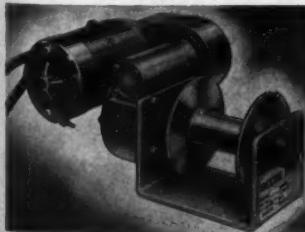
Special multiple controls are also available for use in operating individual batchboards for dump trucks using compartments for separate batches of materials. Individual vacuum control levers in the driver cab permit unloading batches with the same accuracy as with the single-lever control.

For further information write to Velvac, Inc., Dept. C&E, 3530 W. Pierce St., Milwaukee 15, Wis., or use the Request Card at page 18. Circle No. 70.

Portable electric hoist runs on batteries

The Beebe Bros. Mfg. Co. has introduced its new  $\frac{1}{4}$ -ton portable electric hoist that operates on the power furnished by 6, 12, or 24-volt batteries.

This lightweight unit has parts cast of aluminum alloy and steel.



Over-all dimensions are 17 x 11 x 8 inches. The hoist can be run in either direction, and is automatically self-locking due to its worm-gear drive.

The Beebe battery hoist is for use on trucks, trailers, and wherever regular electrical power is not available.

For further information write to the Beebe Bros. Mfg. Co., Dept. C&E, 2734 Sixth Ave. S., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 99.

For more facts, use Request Card at page 18 and circle No. 315 ▶



## SEE A 2-WAY RADIO DEMONSTRATION

Your Motorola man will show you a nearby system in action

MAIL THIS COUPON TODAY!

NATURALLY THERE'S NO OBLIGATION



**MOTOROLA**  
2-WAY RADIO

Motorola Communications & Electronics, Inc.  
A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 51, Illinois

YES, I want a demonstration,  
have your man call me for an appointment.

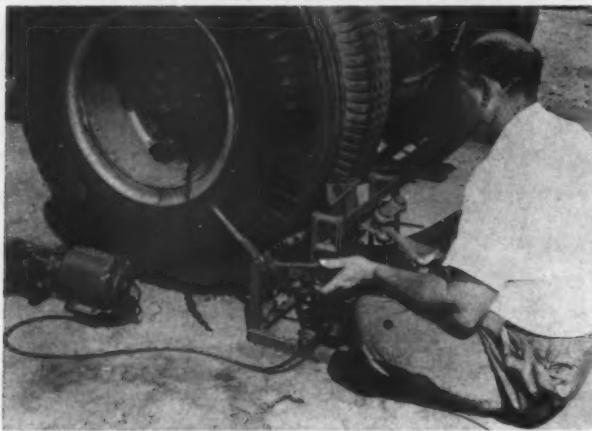
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COMPANY NAME \_\_\_\_\_

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ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_



Composed of two easily handled, portable units, the Honeycutter regrooves truck tires right on the vehicle.

**ELECTRO-JET**  
TRACTORS PORTABLE HEATER

**\$298.**

SALES FOR ONLY

Contractors tell us it's sensational. It really proved itself in the field—over 6,000 sold last year. Priced so low you can buy several!

- Our simple oil burner pressure adjuster automatically doubles regular engine 200,000 BTU's.
- Push button control. Lights instantly up to 500 degrees in 70 seconds. Thermostat maintains constant temperature ranging from 10 to 90 degrees. Shut off automatically when temperature is reached.
- Fully automatic oil burner burns No. 1 or No. 2 fuel oils. Burn 8 hours on one filling. Gas engine driven model priced slightly higher.
- 110 volt fan delivers 3,500 cu. ft. of air per minute.
- Lifetime guarantee.

**DEALERS WANTED!**  
Make \$500 a week. Complete line. Exclusive territory.

**WRITE FOR DETAILS TODAY**

**ELECTRONICS, INC.**  
3001 East Cherry, Vermillion, S. Dak.  
I am interested. Please send more information on—  
 Electro-Jet Model 710 Portable Heater  
 Model 800 Heating Plant  
 I am interested in a dealership. Send more information.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_

**700,000 BTU**  
Oil Fired or Gas  
Heating Plant  
Portable units  
can be in-  
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anywhere  
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**329** K.O.B. Honeycutter

For more facts, use coupon or circle No. 316

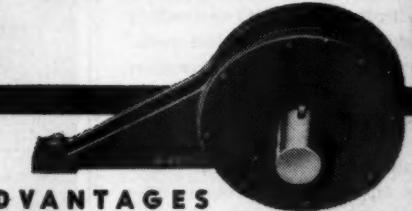
### Fast scaffolding setups with new rebar ledger

A new rebar ledger designed to make quick scaffolding setups for placing reinforcing bars has been developed by Superior Scaffold for use on a wide variety of concrete construction jobs.

Prime feature of the new ledger is the holding pin, which fits inside the end of the 1½-inch ledger bar. This pin slips through the she-bolt or tie hole in the form, and is held in place by a washer and nail on the back side of the form. A vertical 2 x 4, held securely by a ½-inch lag screw, is slipped through the can on the other end of the 4-foot ledger. Conventional 1 x 6 cross bracing is used. If desired, multiple ledgers may be used on a single upright, which can be moved simply by removing the double-headed nail on the inner form.

For further information write to the Superior Scaffold Co., Dept. C&E, 5624 Bankfield Ave., Culver City, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 65.

### GREATER TONNAGE PROTECTION AT LOW COST WITH... S-A TOTALLY ENCLOSED HOLDBACKS



#### ADVANTAGES

- Prevents disastrous reversal of heavily loaded belts during power failures.
- Engages without shock . . . instantly holds . . . instantly releases when power resumes.
- Eliminates feeder point flooding . . . protects men and equipment.
- Easily installed . . . Economical to purchase, operate and maintain.
- 2 7/16" to 12" bore sizes available.
- Stocked for immediate delivery.

Request Catalog No. 557.

**S-A**  
STANDARD PRODUCTS DIVISION  
STEPHENS-ADAMSON MFG. CO.  
57 RIDGEWAY AVENUE • AURORA, ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA  
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

For more facts, circle No. 318

### Vibrator loosens sand frozen in hopper cars

Capable of cutting the unloading time of sand frozen in a railroad hopper car is the Vibrolator vibration inducer Model CCVP-3000, manufactured by the Martin Engineering Co. of Neponset, Ill.

If the penetration of the freeze is no more than 10 inches, the CCVP-3000 reportedly will open a "core" through the load making it possible to work on the frozen shell. When these pieces are broken loose, the vibration carries them out along with the unfrozen majority of the load. Because of its special mounting feet and light weight (81 pounds), the unit can be placed in several spots on any type of car.

The Vibrolator CCVP series is available with air, electric, hydraulic, or gasoline power.

For further information write to the Martin Engineering Co., Dept. C&E, Neponset, Ill., or use the Request Card that is bound in at page 18. Circle No. 122.

### DON'T THROW AWAY CRACKED DIESEL CYLINDER HEADS

You can save 50% of replacement cost with Factory Rebuilt Swick-Guth Heads. Swick-Guth restores cracked or worn heads, blocks, transmission cases to a guaranteed good as new condition by the Controlled Heat Process . . . successfully used for more than a Quarter Century.

GUARANTEED TO YOUR SATISFACTION



Send today for price list and a free booklet on the famous Swick-Guth Process, and the name of the dealer nearest you.

**SWICK-GUTH CO.**  
MICHIGAN KANSAS • FORMERLY GUTH CO.

SPECIALISTS IN WELDING



DIESEL CASTINGS

For more facts, circle No. 319

CONTRACTORS AND ENGINEERS

**RICE** RICE PUMPS  
A Complete Line for CONTRACTORS

6" — 90M  
8" — 125M

**CENTRIFUGALS**  
All Standard AGC  
Sizes 1 1/2" to 10"  
Air and water cooled power—Modern Design—  
Precision built.

**DIAPHRAGMS**  
2", 3", 4" SINGLES  
BIG 4" DOUBLE  
Single and double styles—  
4 to 1 reduction—gearing fully enclosed and operates in oil.

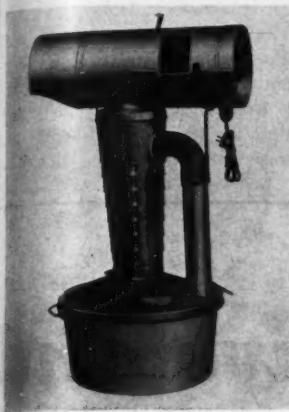
**RICE Pump & Machine Co.**  
BELGIUM, WISCONSIN  
FACTORY BRANCH — W. 41 Ridgewood Ave., Paramus, N. J.

MASONRY CUTTERS  
12 and 30 Ton Sizes

For more facts, circle No. 317

**Offer new oil-burning forced-air heater**

The Scheu Products Co. announces a new oil-burning forced-air heater. The manufacturer states the heater requires no skilled attendant and is easily portable. It stands 43½ inches



high and weighs 33 pounds. The burning rate is adjustable from 70,000 to 125,000 Btu per hour.

The manufacturer also states that the blower unit may be purchased separately and can be used on present Hy-Lo oil-burning salamanders.

For further information write to the Scheu Products Co., Dept. C&E, 277 Stowell St., Upland, Calif., or use the card at page 18, Circle No. 29.

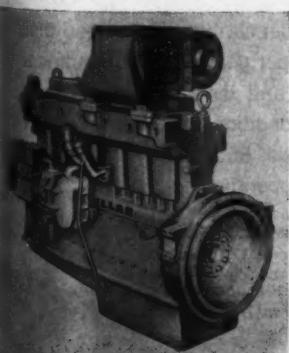
**Diesel truck engine is compact unit**

The Caterpillar Tractor Co. announces its Model 1673 diesel truck engine offering 220 horsepower at 1200 rpm. It is a 6-cylinder turbocharged and aftercooled power plant of 4.5-inch bore and 5.5-inch stroke, and weighs 2,070 pounds.

A special feature of the engine is the Cat fuel system. The precombustion chamber design makes it possible to utilize a fuel injector with a large single orifice. This eliminates fouling problems in the orifice, and greatly reduces maintenance, according to the manufacturer.

The compact Cat 1673 is said to fit almost every make truck in its horsepower range. The White Model 3000, the International Model R-210, the Mack Model B-61, the Diamond T Model 921, and the Kenworth Model 60 are among those included.

For further information write to the Caterpillar Tractor Co., Engine Division, Dept. C&E, Peoria, Ill., or use the card at page 18, Circle No. 61.



Designed for on-the-job heating and drying of aggregates or any other noncombustible material for cold-weather use, the Tanco Flash-Flame dryer, gasoline-engine or electric-motor driven, may be towed or transported in a pickup truck, and reportedly may be placed in productive operation in 15 minutes. The unit uses kerosene, LP bottled gas, or natural gas for fuel. For further information write to the Tanco Mfg. Co., Dept. C&E, 31 Jumel Place, Saratoga Springs, N. Y., or use the Request Card at page 18, Circle No. 124.



**ROEBLING ROYAL BLUE WIRE ROPE**

**WE PUT A LOT OF WORK INTO IT—YOU GET A LOT OF WORK OUT OF IT**

This happens to be the inside view of Roebling Royal Blue—its core has been removed to show the uniformity and symmetry of the rope structure. You see how concerned we are with internal security.

We have to be. To make sure that Royal Blue will live up to the day-to-day demands made upon it. High stresses and unavoidable overloads, abrasion, fatigue, impact, crushing, sheave pressures and abusive drum-winding, to name the major ones.

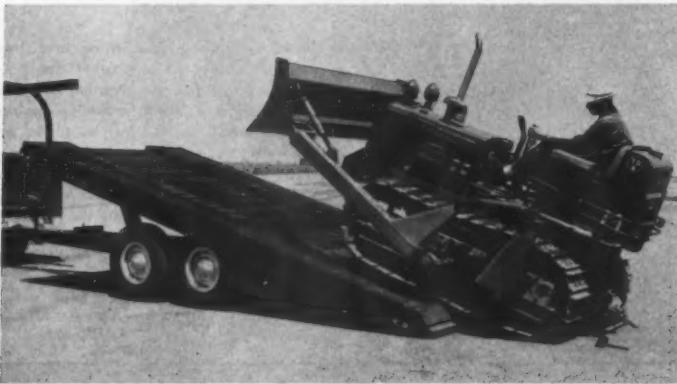
Royal Blue goes through many inspections and tests—both internal and external—before reporting to work. This way we're sure that the rope we build will do what we sell it to do. These quality-control measures are your assurance that Royal Blue is made to save you money—anyway you look at it.

For details about hard-working Royal Blue, ask your wire rope distributor or write Roebling's Wire Rope Division, Trenton 2, New Jersey.



**ROEBLING**

Branch Offices in Principal Cities • John A. Roebling's Sons Division • The Colorado Fuel and Iron Corporation  
For more facts, use Request Card at page 18 and circle No. 320



International Harvester's new No. 41 tilt-bed trailer is said to provide feather-light tilting without platform slam. Independent, automotive-type wheel suspension permits safe, one-man loading of all types of equipment.

#### Introduce new 5-ton tilt-bed trailer

International Harvester Co. has announced the availability of its new No. 41 4-wheel tilt-bed trailer, a versatile high-speed hauling unit with a rated capacity of 10,000 pounds when using 8.00 x 14.5, 12-ply tires.

According to the manufacturer, the exclusive feature of the No. 41 is the Neidhart axle. Each wheel is set on an independent axle embedded, under great pressure, between four rubber cushions. These cushions give each wheel independent knee action and eliminate the need for springs, shackles, or bolts and shock absorbers. As a consequence, lubrication is said to be unnecessary. When the tandem wheels pass over an obstruction, only one wheel flexes and is pushed up, while the remaining three and the platform remain level.

The No. 41 with its full 8 x 17-foot platform is supplied with a hydraulic cylinder to give positive tilting and to eliminate platform slam. If the towing vehicle is equipped with a hydraulic pump, the cylinder can be adapted to give complete hydraulic control of the trailer, raising or lowering it under power at all times. Optional equipment, such as lights, wiring, and safety breakaway switch, is available.

For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 17.

#### Grouser bar designed for easy installation

A new type of grouser bar called Grip-Lug is announced by Allied Steel & Tractor Products, Inc.

According to the company, the bar features a shape that permits it to be quickly welded to the worn grouser with just one pass of the welding rod.

Grip-Lug grouser bars are made from special shock-resistant alloy steel that work-hardens on the job to provide peak service life.

For further information write to Allied Steel & Tractor Products, Inc., Dept. C&E, 7835 Broadway, Cleveland 5, Ohio, or use the Request Card at page 18. Circle No. 134.

#### Pocket-size radio unit for compact projects

A fully transistorized 2-way radio—small enough to be carried in a shirt pocket—has been introduced by Ross Laboratories, Inc.

Called the Pocket Talkie, the unit is recommended for short-range communication and is said to be ideal for smaller construction projects, such as building and paving jobs.

The Pocket Talkie operates under a special provision of the 27-mc citizens band, which requires no license

or permit. According to the manufacturer, a reasonable range in fairly open country would be 2 miles or, under very favorable conditions, 3 miles. In a crowded city among tall steel-reinforced buildings, the range would be less.

For further information write to Ross Laboratories, Inc., Dept. C&E, 124 Lakeside Ave., Seattle 22, Wash., or use the Request Card at page 18. Circle No. 28.

## All-wheel drive and gr



## the TS-14 "Euc" is in a class by itself!

No matter what your scraper requirements may be—small yardage work for land conservation, secondary roads etc. to the biggest projects—the Euclid TS-14 can cut your earthmoving costs.

Here's performance and overall workability in a medium size scraper—14 yds. struck and 20 yds. heaped—that's way ahead of any scraper of comparable capacity. With two engines (296 total h.p.) and separate Torqmatic Drives for each axle, the TS-14 gets a heaped load in a hurry... gets out of the borrow pit or cut fast... and highballs on the haul road. It can self-load in practically any

material, and with a pusher it's a big producer on the toughest jobs.

If you want a one-man earthmoving spread that can work more days per year... that handles a wider range of jobs and isn't stalled by steep grades and adverse conditions... ask your dealer for the new catalog No. 555 or better yet, have him show you one in operation.

**EUCLID DIVISION OF GENERAL MOTORS**  
Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio  
and Lanarkshire, Scotland



#### Hoe has high flotation, maneuverability, speed

The new Model 250-OX backhoe announced by the Hydraulic Machinery Co. offers the combined advantages of high flotation on 14-inch-wide tires, excellent off-highway maneuverability, and 50-mph job-to-job travel speeds, according to the manufacturer.

Four-wheel drive, power steering, big 14.00 x 20 tires, and a heavy-duty chassis on a 112-inch wheelbase all

contribute to successful operation in rough or mucky terrain, the company reports. The 250-OX is designed to approach the flotation and stability of crawler-mounted units, while offering the maneuverability of off-highway rubber-tire tractors, plus the highway travel speeds of truck-mounted units.

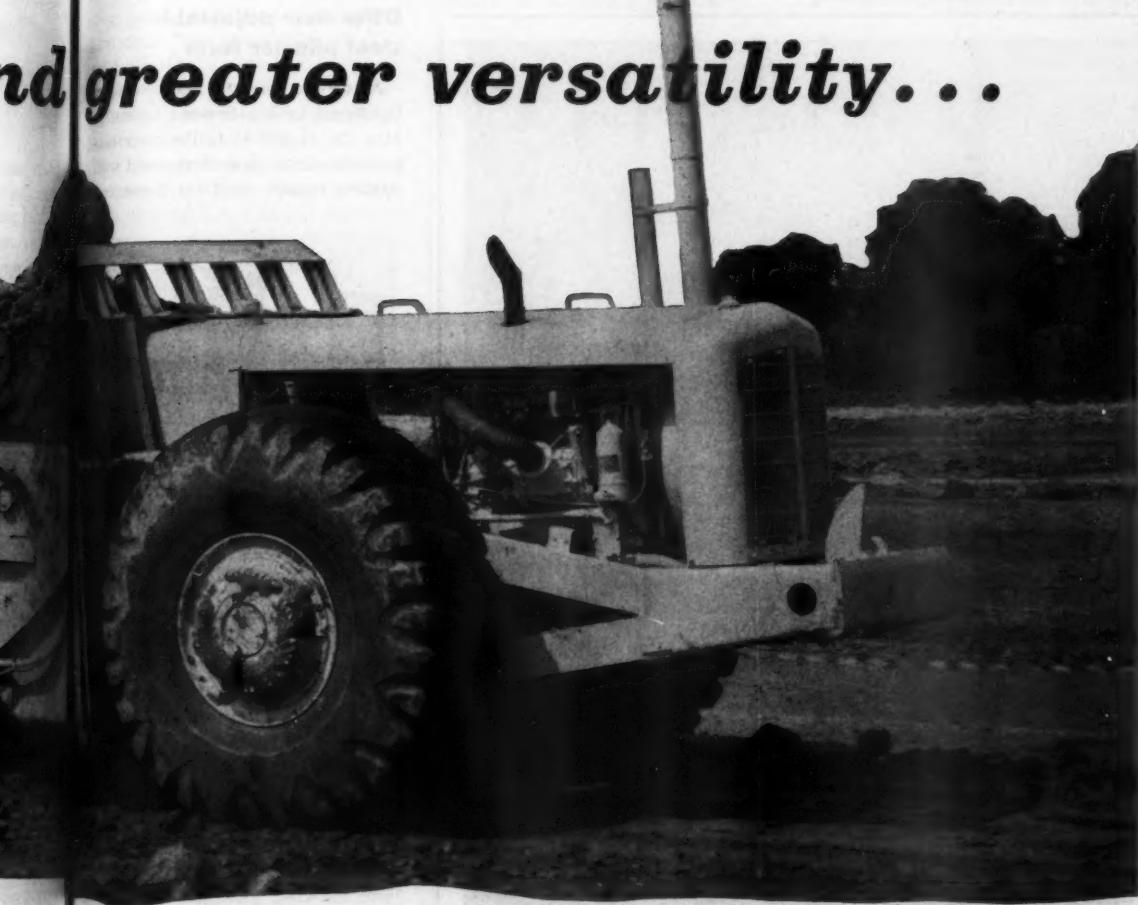
The bucket is  $\frac{3}{4}$  yard struck. The 250-OX digs 13½ feet deep, reaches 20 feet from pivot, swings 200 degrees, and has full-bucket dump clearance of 11½ feet. Available equipment includes an all-weather operator cab and a front-mounted winch. The Model 250-OX hoe attachment is also available (as a Model 250 unit) for mounting on new or used 2-ton trucks of standard design.

For further information write to the Hydraulic Machinery Co., Dept. C&E, 1400 National Ave., Waukesha, Wis., or use the Request Card at page 18. Circle No. 3.

#### Diamond drilling rig for holes to 8 inches

The Milwaukee Electric Tool Corp. announces a new diamond drilling stand—the Vac-U-Rig Model 4110.

Capable of drilling holes up to 8 inches in diameter, the unit secures quickly to concrete and tile. A vacuum pump develops 3,000 pounds



- Twin-Power... a Euclid exclusive
- Hydraulic scraper operation
- Proven planetary drives
- One-man earthmoving spread
- Greater service accessibility



All-wheel drive "Twins" give you a longer, more profitable work season



holding force within two 13-inch suction disks, enabling the stand to be mounted in either horizontal or vertical positions.

Complete with a 2-hp Milwaukee-built motor, the Vac-U-Rig weighs only 125 pounds, and can be rolled easily from job to job.

Other features include an ammeter to help maintain proper drilling speed and pressure; a bubble level to assure accurate positioning and true drilling; a shear pin to effectively protect the motor against sudden overload; and a built-in water swivel to insure maximum efficiency and longer life for the diamond bits.

For further information write to the Milwaukee Electric Tool Corp., Dept. C&E, 5316 W. State St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 77.

For more facts, use Request Card at page 18 and circle No. 321



## EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE



This tractor-drawn vibrating roller, offered by the Douglas Motors Corp., is powered by a 32-hp, air-cooled gasoline engine complete with 12-volt battery, electric starter, generator, 35-gallon fuel tank, and remote throttle control. Designated Model 4T, this 8,000-pound unit develops 1,600 vibrations per minute, and will produce compaction forces equivalent to a 20-ton dead-weight roller, according to the manufacturer. For further information write to the Douglas Motors Corp., Western Equipment Division, Dept. C&E, 1234 N. 62nd St., Milwaukee 13, Wis., or use the Request Card at page 18. Circle No. 98.

B.F.Goodrich



Curtiss-Wright CW-226 with Hi-Torque brakes carries heavy loads, averaging 90,000 pounds of earth.

## Contractor gets trouble-free performance with Hi-Torque brakes on rough, hilly terrain

Completely dependable brake performance, with high stopping power always available, has been reported by Talbott Construction Company, Winchester, Ky. Talbott operates several Curtiss-Wright earthmovers with B.F.Goodrich Hi-Torque brakes.

On one project, the machines were in operation on rough, hilly terrain over a six months period, ten hours a day, six days a week. No adjustments, replacements, or maintenance of any kind was required. Dust and water are effectively sealed out, so the environment presented no ill effects. Automatic adjusters maintain proper clearance, adjust for lining wear.

B.F.Goodrich Hi-Torque brakes cut stopping distance approximately in half, compared to conventional two-shoe brakes. These brakes are now available on heavy dump trucks, tractor-scrapers, coal haulers, mine trucks, and other heavy off-highway vehicles, from several manufacturers. For information ask your equipment maker, or write B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Department CE-10, Troy, Ohio.

## B.F.Goodrich Hi-Torque brakes

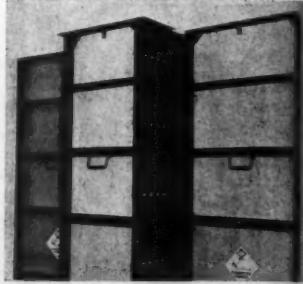
For more facts, use Request Card at page 18 and circle No. 322



Hi-Torque brakes permit safe operation on faster cycles.

## Offer new adjustable steel pilaster form

A new steel pilaster concrete form is offered by the Symons Clamp & Mfg. Co. According to the manufacturer, a pair of these forms used with Symons regular Steel-Ply forms can



Typical setup using the Symons steel pilaster form.

be teamed to produce pilasters from 2 to 12 inches deep in 2-inch increments.

The new pilaster is said to further increase the versatility of Symons prefabricated forms, and the steel construction reportedly permits unlimited reuse of the forms.

The steel pilaster forms may be obtained in standard sizes of 3, 4, 6, and 8 feet, and in other sizes on special order.

For further information write to the Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 4.

## Aluminum dump bodies for bigger payloads

New weight-saving aluminum dump bodies, said to permit hauling of optimum legal payloads while offering the same rugged construction features provided by steel bodies of similar design, have been introduced by Hercules Steel Products Co.

Designed for tandem-axle chassis in the 30,000 to 65,000-pound gvw range, the new Model LA-20V bodies have hoist well housings to accommodate weight-saving front-mount telescopic hoists. The bodies are available in standard lengths of 12 to 18 feet and with 84-inch standard inside width to meet the needs of

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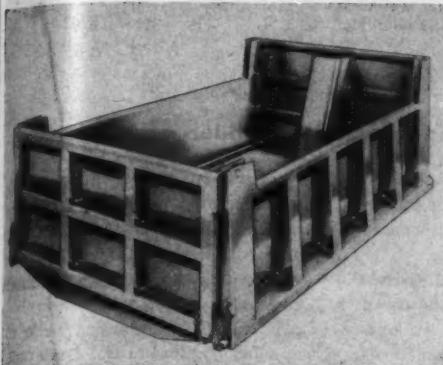
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Hercules Steel Products' new aluminum dump bodies are designed for optimum legal payloads.

various types of hauling and dumping.

The new units feature all-welded construction with special aluminum alloy plates, extrusions, and structural parts. The bodies have sloping rub rails that are formed into the side plate. Front and rear corner posts of straight-box aluminum plate have 12-inch faces.

For further information write to the Hercules Steel Products Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 20.

#### Water cans handle hot or cold liquids

A galvanized-steel water can lined with polyethylene and insulated with urethane foam, designed to maintain the temperature of hot or cold drinks, is offered by the H. P. Gott Mfg. Co.

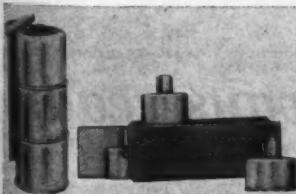
The new containers—available in 2, 3, 5, and 10-gallon sizes—are seamless, easy to keep clean and sanitary, and are not corroded by coffee, soup, or other hot liquids, or beverages like lemonade.

For further information write to the H. P. Gott Mfg. Co., Dept. C&E, P. O. Box 702, Winfield, Kans., or use the card at page 18. Circle No. 50.

#### All-weather flare kits withstand 45-mph winds

The V-3 bracketed flare kit and CC-30 boxed flare kit are available from the R. E. Dietz Co.

These flares withstand 45-mph winds, and burn brightly in rain or snow, according to the manufacturer.



Both flare kits are leakproof, and are constructed of heavy-gage steel.

The V-3 features a retractable burner, assuring a primed wick for instant lighting. The CC-30 oil flares utilize a fixed-type burner.

For further information write to R. E. Dietz Co., Dept. C&E, 225 Wilkinson St., Syracuse 1, N. Y., or use the Request Card at page 18. Circle No. 33.

#### Salamander, other units added to heater line

Additions to the Insto-Hot LP-gas heater line for 1960 have been announced by the Insto-Gas Corp.

The new Model 1412 salamander is similar to the Model 1410 except that it has a larger and heavier base. The base of the new unit is 14 inches in diameter and is made of 13-gage steel.

An auxiliary blower unit has been made available for the 1700 Series Insto-Hot blower heaters. The new blower unit provides greater heat distribution required for specialized operations, according to Insto-Gas.

For further information write to the Insto-Gas Corp., Dept. C&E, 998 E. Woodbridge Ave., Detroit 7, Mich.,

or use the Request Card at page 18. Circle No. 2.

#### Announce new push plate for crawler tractors

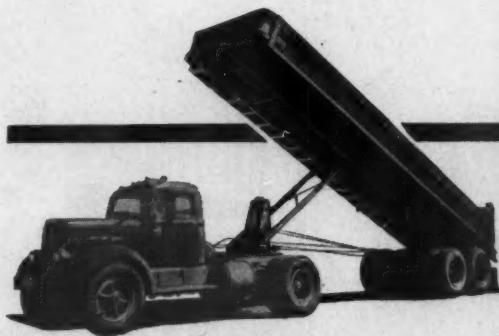
A new, direct-mounted push plate—the Model 25-PF—that distributes loads to four separate areas of the tractor main frame is available for the International TD-25 crawler.

According to the manufacturer, offset and corner loadings are easily withstood, and the tractor can push with any part of the plate.

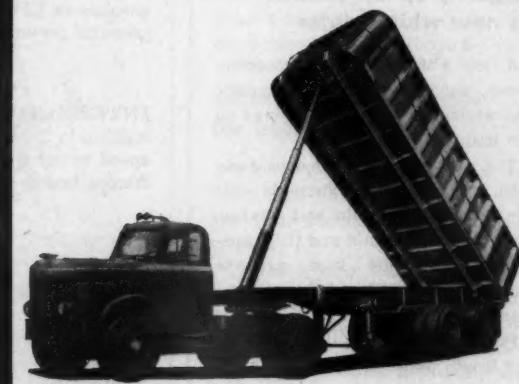
For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 91.

Information on any product can be obtained by circling the designated number on the card at page 18.

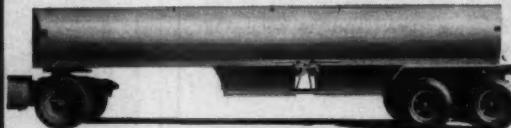
## FRUEHAUF DUMP TRAILERS For More Profit On Any Job!



**THE FRUEHAUF-SCHONROCK** cable dump is still the most economical Dump Trailer to purchase or maintain. The simply-designed, frameless unit now has more cost-cutting, time-saving features than ever! Longer booster arms and larger rollers provide faster dumping with less strain on truck and cable. Payloads are still up to 4,000 pounds greater than those of most competitive hoist units with or without full chassis frames.



**THE NEW FRUEHAUF "TOUGHY" I-Beam** telescopic hydraulic hoist dump is available in both tandem and single axle units in a wide range of body and chassis lengths to fit your weight distribution needs. Capacities range from 8 to 26 cubic yards. 88" of inside width, with low or high sides.



**FRUEHAUF HOPPER-TYPE** Dump Trailers are available in many styles, with capacities up to 14 cubic yards. They are used by professional haulers for a variety of specialized uses, including the hauling of sand, gravel, crushed rock, cinders, slag, bulk cement, lime and many other aggregates and dry powdered materials. Specially suited to rough terrain.

For Forty-Six Years—World's Largest Builder of Truck-Trailers!



**FRUEHAUF TRAILER COMPANY**

10949 Harper Avenue • Detroit 32, Michigan

PLEASE SEND ME FULL INFORMATION WITHOUT OBLIGATION ON THE NEW

Cable Dumps

Hoist Dumps

Hopper-Type Dumps

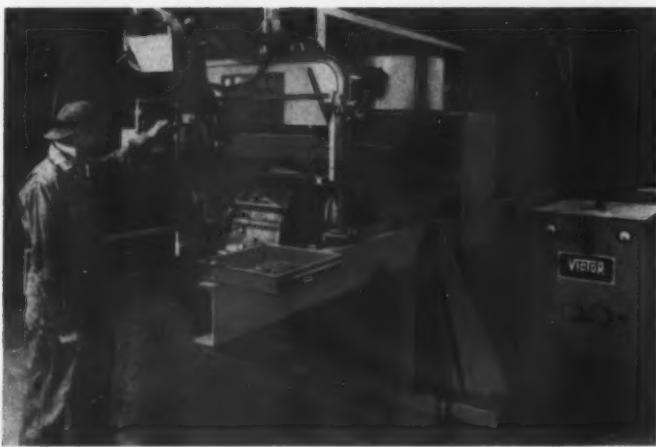
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For more facts, use coupon or Request Card at page 18 circle No. 323



The Victor self-loading grouser-bar welder is designed to handle all lengths and widths of track without disassembly.

#### Grouser-bar welder is automatic rebuilder

An automatic rebuilder, said to cut in half the time required for renewing tractor grouser pads, is announced by the Victor Equipment Co.

This machine is self-loading, and handles all lengths and widths of track without disassembly. An oxy-acetylene trimming tool automatically trims the grouser bar to be reconditioned; an air-hydraulic holding fixture places the new bar in curved position and holds it for welding.

A centrally located control panel saves operator time and facilitates training of new operators. Electronic controls designed in modular units simplify maintenance and troubleshooting.

For further information write to the Victor Equipment Co., Dept. C&E, 844 Folsom St., San Francisco 1, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 93.

#### Fingertip speed control on new whiteprinter

A new whiteprinter with fingertip speed controls and an exceptionally fast whiteprinting lamp is offered by the Rotolite Sales Corp.

The new speed control does away with gear changing. There is only one lamp to maintain and change. Both the printing unit and the transparent developing tube can be mounted on any office wall, states the manufacturer.

Five models are available, taking any length paper in widths of 18, 27, and 42 inches.

For further information write to the Rotolite Sales Corp., Dept. C&E, Stirling, N. J., or use the Request Card at page 18. Circle No. 53.

#### Improved 5-hp chain saw lighter, more powerful

Lombard Governor Corp. has announced improvements on its Wonder 650 direct-drive chain saw.

The new Lombard "slim engine" is now 15 per cent smaller, has 15 per cent more power, and yet weighs 15 per cent less—just 16 1/4 pounds, less bar and chain.



The diaphragm pump carburetor, protected by a special guard, permits cutting in all positions; the blade position will permit even close-to-the-ground work. Additional features of the 5-hp saw are conveniently located thumbtip-action hand oiler, shielded spark plug, pistol-grip control, and protected throttle control wires.

For further information write to the Lombard Governor Corp., Dept. C&E, 68 Main St., Ashland, Mass., or use the Request Card at page 18. Circle No. 7.

**INTERNATIONAL R-LINE** six-wheelers (right) save time, reduce bog-down and slow-down problems by providing maximum flotation and traction. Six-cylinder engines up to 501 cu. in. displacement are available with gasoline or LPG power. Gear reduction of over 100-to-1 multiplies engine torque to tandem axle to assure smooth, powerful performance. GVW ratings up to 53,000 lbs.

**INTERNATIONAL V-LINE** dump trucks (below) are ideal for exacting operations. Powerful gasoline V-8 engines with up to 257 hp. supply the power needed to come out of rough areas with king-size loads plus a high average road speed to cut trip time. Also available with LPG and diesel power supplying 695 lb-ft. of torque. Extra heavy-duty frames, brakes and front end can really stand long term punishment. GCW ratings exceeding 100,000 lbs.



## INTERNATIONAL is always ready to serve and solve your transportation needs!

INTERNATIONAL six-wheel dump trucks have "take-any-terrain" ruggedness and maneuver easily in "tight" working conditions—just two reasons why they do their job right and on time. They're built to get in and out. Whatever INTERNATIONAL dump truck model you select, you can be assured of maximum power-performance every day of the year. See your INTERNATIONAL Dealer or Branch today for full details.



A Toledo portable motor truck scale weighs a load. The optional Toledo dial head, with a Printweight 400, is in the house next to the weighing platform.

### Portable truck scales in capacities to 100 tons

Portability, ease of installation, and flexibility for future needs are listed among the major features of the new portable motor truck scales announced by the Toledo Scale Corp.

These new all-steel scales are self-contained units that can readily be moved over the highway or by rail from one job site to another.

When a Toledo portable reaches the next temporary location, only simple footings are necessary to hold the self-contained units.

Occasionally the weighing needs will change along with the job site. To meet this requirement, "Add-A-Unit" design has been incorporated into the new scales. This means that the user can economically add units to capacities up to 100 tons and platform lengths to 70 feet, states the manufacturer.

Toledo portable truck scales are offered in a wide range of capacity and platform lengths from 8 x 10-foot 15-ton portable axle-load units, to 12 x 70-foot 100-ton tandem-connected units.

For further information write to Toledo Scale, Division of the Toledo Scale Corp., Dept. C&E, Telegraph Road, Toledo 12, Ohio, or use the Request Card at page 18. Circle No. 68.

### Offer new transmission for heavy-duty work

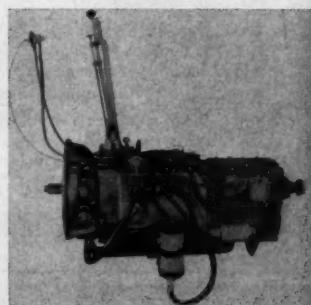
A new 9-speed transmission for heavy-duty off-highway applications has been announced by the Fuller Mfg. Co.

Providing nine closely spaced forward gear ratios selected with a single shift lever, the Fuller R-1750 RoadRanger transmission features a pressurized jet-spray lubrication system for the operating gear teeth;



Model Series	RF-192	BCF-182	B-184	B-182	B-164
Gross Vehicle Rating	43,000	35,000	24,000	21,000	19,000
Body	8-10 Yd.	8 Yd.	4 Yd.	4 Yd.	4 Yd.
Wheelbase	157 in.	149 in.	141 in.	141 in.	129 in.
Engine	450 cu. in.	345 cu. in.	345 cu. in.	345 cu. in.	304 cu. in.
Transmission	5-speed Direct, 3-speed Auxiliary	5-speed Direct, 3-speed Auxiliary	5-speed Direct	5-speed Direct	4-speed Synchro-mesh
Rear Axle and Capacity	34,000 single-reduction tandem	28,000 single-reduction tandem	18,500 2-speed	16,000 2-speed	15,000 2-speed
Tires	9.00 x 20 10 ply	9.00 x 20 10 ply	10.00 x 20 12 ply	9.00 x 20 10 ply	8.25 x 20 10 ply
Frame Reinforcements	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"
Heavy Duty Springs			Front & Rear	Front & Rear	Front & Rear

Our schedule demands pinch your deadline, and you need a dump truck right away—six-wheeler or a single axle—call on your INTERNATIONAL Truck Dealer or branch. Within 24 hours, dump truck models in popular sizes and specifications are ready for shipment from the INTERNATIONAL Truck Sales Processing center. This "pool" has been made possible by getting complete units in the field when you want them. Through anticipation and knowledge of your emergency needs and equipment demands, INTERNATIONAL is prepared to keep your job on schedule.



The Fuller semiautomatic 9-speed R-1750 RoadRanger is designed for heavy-duty off-highway applications.

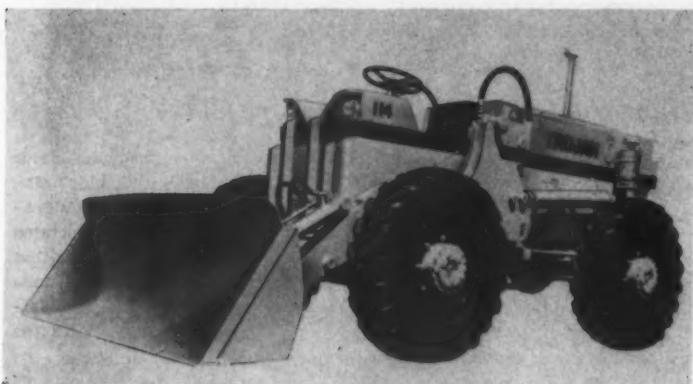
pressurized lubrication for the main-shaft pilot bearing of the front section, as well as bushings of the main-shaft-mounted gears; a countershaft inertia brake that makes quick upshifts possible without double clutching; and an inhibitor that prevents the operator from engaging gears in the front section until the automatic shift in the auxiliary is completed.

The newest RoadRanger is engineered for service with the most powerful automotive diesel engines built, and is designed to provide maximum performance, reliability, and ease of operation in such applications as earthmoving, mining, and quarrying. Two power-takeoff openings are provided, one on each side of the transmission.

For further information write to the Fuller Mfg. Co., Transmission Division, Dept. C&E, Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 16.

**INTERNATIONAL® TRUCKS** WORLD'S MOST COMPLETE LINE 

INTERNATIONAL HARVESTER CO., CHICAGO • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors  
For more facts, use Request Card at page 18 and circle No. 324



Such features as power-shift transmission, planetary axles, power steering, and vacuum-boosted hydraulic power brakes permit operators of the Trojan Model 114 to reach maximum production.

### New tractor shovel takes 1 2/3-yard bucket

Another addition to the Trojan line of tractor shovels, the Model 114, features a 6,500-pound lifting capacity and bucket sizes from 1 to 1 1/3 cubic yards.

Power-shift transmission, planetary axles, power steering, vacuum-boosted hydraulic power brakes, and a complete line of attachments are other features. Road speeds range to more than 25 mph.

The machine's "safety-curve" lift arms give maximum protection to the operator, while the extra-wide tread

and longer wheelbase provide exceptional stability under difficult working conditions.

A torque-proportioning differential axle permits maximum utilization of power. Both gasoline and diesel operation are available through three engine options. A fully adjustable seat, lights, and complete panel instrumentation are standard equipment.

Total weight is approximately 11,000 pounds. Over-all length is 17 feet 4 inches, and width (over axle hubs) is 7 feet 6 inches. Forty-degree bucket tip-back at carry position is provided.

For further information write to the Yale & Towne Mfg. Co., Trojan Division, Dept. C&E, Batavia, N. Y., or use the Request Card at page 18, Circle No. 120.

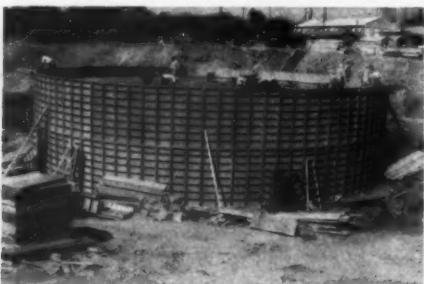
Product

## A NEW NAME FOR CONCRETE FORMS **SIMPLEX-WACO** *Self-Aligning* HEAVY DUTY CONCRETE FORMS

The name is new because Simplex Forms System, Inc. has purchased the concrete forms division of Waco Manufacturing Co.! And, while the basic Waco forms design is the same, you can count on years of Simplex experience to bring you the finest in quality and workmanship in Simplex-Waco forms.

Ideal for all types of concrete forming, these rugged, flexible forms will now be available on a wider scope through greater distribution.

Whether you buy or rent Simplex-Waco forms, you'll find that their built-in quality, standardized hardware, and proved durability will pay off in smooth, accurate walls job after job. Send for complete details today.



### AN OUTSTANDING EXAMPLE OF SIMPLEX-WACO SIMPLICITY

Approximately 6,000 feet of Simplex-Waco concrete forms were used to form the inside and outside walls of this 1/4 billion gallon water storage tank in Dallas, Texas. Because of fewer loose hardware parts, storage for wedges in panels, and an exclusive alignment-slot, these steel reinforced panels were securely erected in a minimum of time.

CHOICE AREAS AVAILABLE FOR DEALERS OR DISTRIBUTORS

**SIMPLEX INDUSTRIAL FORMS, INC.**  
SUBSIDIARY OF SIMPLEX FORMS SYSTEM, INC.  
5611 Industrial Avenue  
Rockford (Loves Park) Illinois

For more facts, use Request Card at page 18 and circle No. 325

## WHAT SIZE DO YOU NEED?

There is a Williams digger designed specifically for your hole digging project. From small-diameter shallow holes for telephone and power line construction to large-diameter deep shafts with underreamed sections for caisson foundation installations, there is a Williams machine designed to do your work.

All Williams diggers feature:

- Separate high speed throw-off features
- Power crowd for rapid penetration
- Simplicity of design for operating and maintenance ease.

Manufactured by

**HUGH B. WILLIAMS MFG. CO.**  
8330 Lovett Ave.  
P. O. Box 7815 • Dallas, Texas

Write Exclusive Distributor

**JOSLYN MFG. & SUPPLY CO.**  
2101 Corinth St. • Dallas, Texas

for DESCRIPTIVE LITERATURE

For more facts, use Request Card at page 18 and circle No. 326

### Two winter aids for transit mixers

A special winterized circulating and quick-drain water system is now available for all Challenge-Cook truck mixers. This system is particularly advantageous in freezing weather since it easily permits the water system in the mixer to be completely drained after each day's work.

Another optional feature important to cold-weather operation is the Challenge-Cook air-pressure water injection system, which operates off the truck air system and maintains a predetermined air pressure in the water tank. Air pressure, instead of a pump, is used to force the flow of water. This method eliminates the centrifugal pump and the accompanying pump maintenance problems, states the manufacturer.

For further information write to Challenge-Cook Bros., Inc., Dept. C&E, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card that is bound in at page 18, Circle No. 103.

### High-lift carrier has 30-ton capacity

A new 60,000-pound-capacity straddle carrier with a lift height of 48 inches—said to be almost double that of other carriers—has been introduced by the Industrial Truck Division of the Clark Equipment Co.

Designated the Series 121 High-Lift carrier, the vehicle is reported to be ideally suited for heavy-construction applications. Its high-lift design enables the carrier to tier loads two or three high, depending on load height. The rig is especially recommended for handling prestressed beams and other members.

Load hooks are raised and lowered by four hydraulic cylinders. Lifting and lowering speed is equalized by four metering pistons that control displacement of hydraulic fluid to each cylinder. The carrier is powered by a 6-cylinder gasoline engine.

CONTRACTORS AND ENGINEERS

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OCTOBER



The Clark Series 121 straddle carrier has a lift height of 48 inches.

of 404-cubic-inch displacement.

For further information write to the Clark Equipment Co., Industrial Truck Division, Dept. C&E, P. O. Box 31, Battle Creek, Mich., or use the Request Card at page 18. Circle No. 21.

#### New compound protects, preserves wood forms

Long-lasting, economical, water-proof protection for wooden concrete forms is now available to contractors and manufacturers of prestressed and precast-concrete units with concentrated, easy-to-apply Poly-Kote, according to the manufacturer, Brad Chemical, Inc.

Poly-Kote is described as a highly

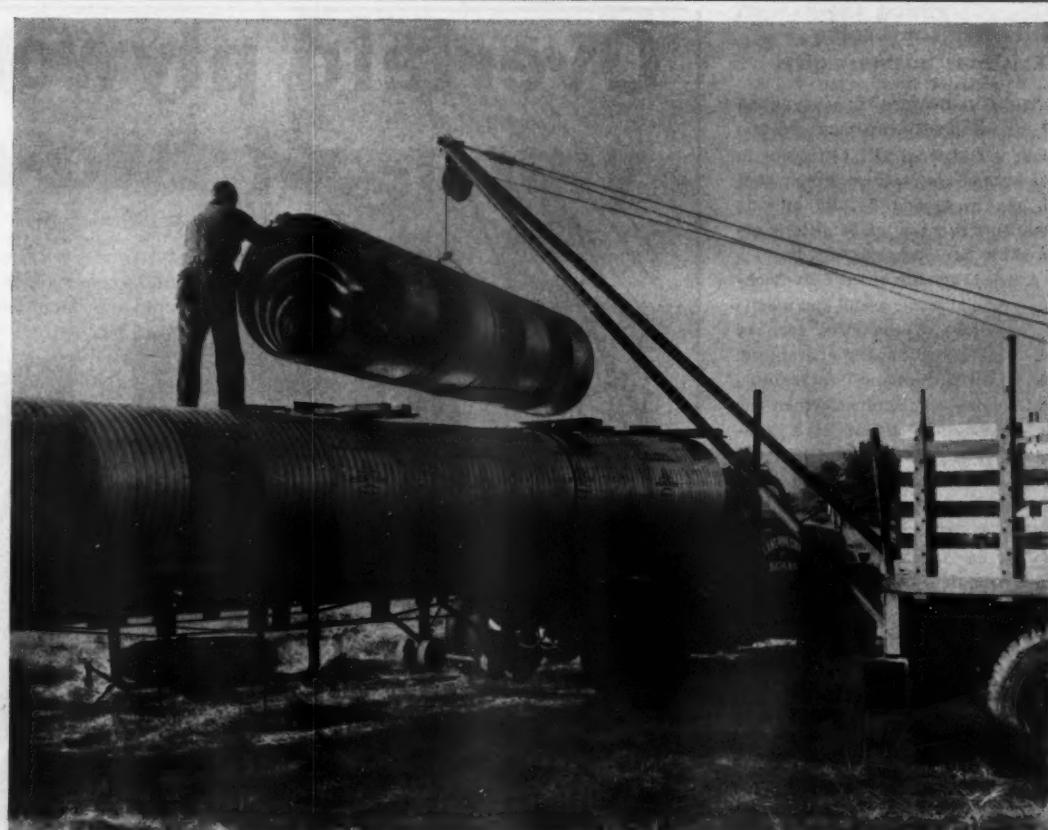


Brad Chemical's new Poly-Kote is easily sprayed on forms either before assembly or in place.

concentrated compound of active organic ingredients that penetrate deep into the wood, coating each fiber with a flexible layer impervious to water or chemical action. Unlike other coatings said to oil-soak and soften wood fibers, speeding deterioration, the new Brad compound acts to preserve and strengthen wood against rotting, the company reports.

Mixed with ordinary fuel oil in a 54:1 ratio, Poly-Kote is easily applied by brush, spray, or mop. The coating can be applied right on the job, with forms already up or still on the ground.

For further information write to Brad Chemical, Inc., Dept. C&E, 111 W. Washington St., Chicago 2, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 11.



## Long lengths and light weights cut installation time ...when you specify Beth-Cu-Loy for drainage structures

One of the chief advantages of using drainage pipe made of Beth-Cu-Loy galvanized steel sheets is the long lengths—and the light weights—that are feasible. Here's an example: a 20-ft length of 18-in. diameter pipe made of 16-ga Beth-Cu-Loy weighs but a trifle over 300 lb.

#### Easy to Lift...Easy to Make Joints

Only the simplest of lifting machinery is needed to unload and place the Beth-Cu-Loy pipe in the trench. And, of course, the long lengths reduce the number of field joints, enabling the laying crews to keep right up with the trench diggers. The joints themselves are simple and time-saving.

#### Steel for Strength, Durability...Flexibility, too

Light though it is, pipe made of Beth-Cu-Loy has the great strength of steel, and the corrosion-resistance of zinc. It is flexible enough to "give" with the fill and help distribute the load around its own periphery. It conforms well to grade and alignment, and absorbs impact, vibration, and the shifting effect of weather changes.

Beth-Cu-Loy sheets meet the rigid specs of the American Association of State Highway Officials. If you would like further details about Beth-Cu-Loy sheets for durable drainage pipe, just get in touch with any Bethlehem sales office.



For Strength  
...Economy  
...Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

**BETHLEHEM STEEL**

For more facts, use Request Card at page 18 and circle No. 327



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A general-purpose soil-pulverizing unit, the Tillit thoroughly mixes soils and aggregates to a depth of 6 inches.

#### New rotary tiller attaches to tractor

A rotary tiller designed to churn hard dirt into a smooth, homogeneous layer is available from the Tractor & Implement Division of the Ford Motor Co. Driven by the tractor's power takeoff, the Tillit engages the ground with rotating high-strength tines that dig down to a maximum depth of 6 inches.

This machine literally pulverizes and homogenizes the soil, burying top covering, or thoroughly mixing any added aggregates, states the manufacturer.

Ideally suited for use with Ford Se-

lect-O-Speed transmission-equipped tractors that offer constant PTO speed regardless of forward travel, the Tillit also can be used with other makes of tractors with proper three-point implement-linkage systems.

The Tillit is available in five models, with cutting widths ranging from 36 to 60 inches.

For further information write to the Ford Motor Co., Tractor & Implement Division, Dept. C&E, 2800 E. Maple Road, Birmingham, Mich., or use the Request Card at page 18. Circle No. 96.

#### Gift certificates solve Christmas business gifts

The Gift-Bookard, a combination of personalized Christmas greeting card, a registered gift certificate in the form of a postage-paid reply card on the back, and booklet offering recipients a choice of 24 gifts is offered by the Gallery of Gifts, Inc.

A special feature of the Gift-Bookard is said to be the useful and worthwhile nature of the gifts, each of which is unconditionally guaranteed, and whose performance is warranted and bonded by insurance. When the recipient's gift certificate card is received at the Gallery of Gifts, the gifts are then wrapped by the firm and shipped prepaid.

For further information write to Gallery of Gifts, Inc., Dept. C&E, 80 Park Ave., New York 16, N. Y., or use the Request Card at page 18. Circle No. 30.

#### Radio paging device fits in user's pocket

A personal radio paging system is announced by Motorola, Inc.

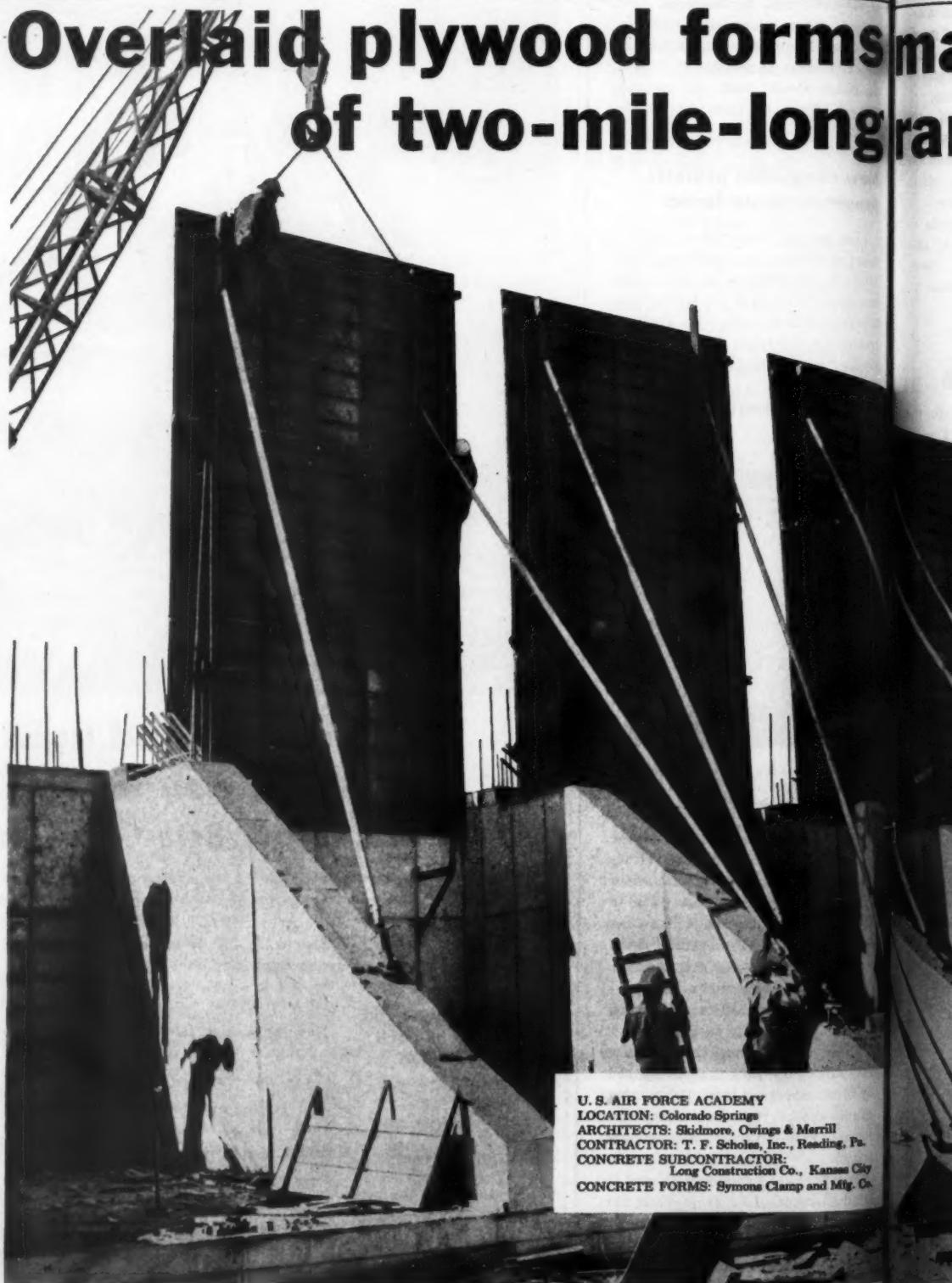
The new system, which operates on standard mobile radio VHF frequency bands (25 to 54 mc, and 144 to 174 mc), enables one-way communications between a central base station and individuals carrying compact receivers. When an individual is paged, an alerting tone sounds in his receiver, and the voice message follows. Private communications are maintained, since no other paging receiver is alerted.

The radio pager operates from either a rechargeable battery or mercury cells. The rechargeable nickel cadmium supply provides up to 12 hours operation with each charge. The replaceable mercury cells last up to 120 working hours.

The entire receiver weighs only 14 ounces, is easily clipped in a pocket or on a belt, and accommodates an external antenna.

For further information write to Motorola, Inc., Communications & Industrial Electronics Division, Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 87.

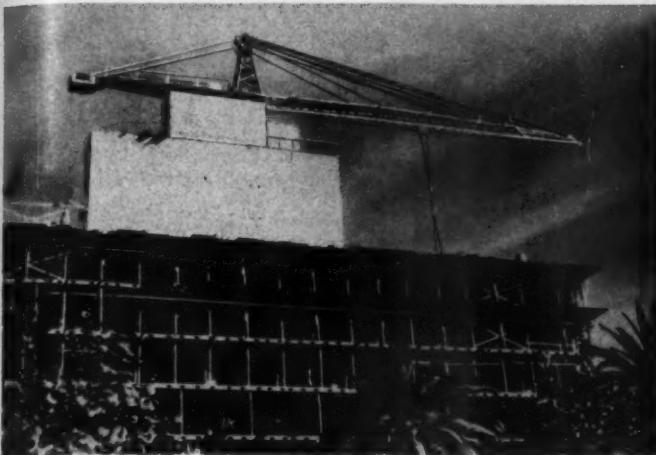
## Overlaid plywood forms make two-mile-long ramp



#### U. S. AIR FORCE ACADEMY

LOCATION: Colorado Springs  
ARCHITECTS: Skidmore, Owings & Merrill  
CONTRACTOR: T. F. Scholes, Inc., Reading, Pa.  
CONCRETE SUBCONTRACTOR: Long Construction Co., Kansas City

CONCRETE FORMS: Symons Clamp and Mfg. Co.



The Concretor climbing crane is shown at work on a North State Builders, Ltd., project, at Palo Alto, Calif.

#### Danish-built crane rises with building

A new climbing crane, developed in Denmark, is offered by B. M. Heede, Inc.

The unit, known as the Concretor, is designed to stay atop the job, no matter how high the building goes, and a lightweight remote-control panel permits one-man operation.

The effective radius varies from 66 to 100 feet, depending on which of the four available models is being used. The tower protrudes far enough above the elevator or stair shaft in which it climbs to provide clearance for the construction of two floors.

When these two floors are completed, the crane climbs up by its own hoisting winch to work on the next two floors. At the completion of the building, the crane comes down quickly and easily—no part weighs more than one ton.

Easy to erect—using its own power equipment—this new crane can also be used on rails or in a fixed position.

For further information write to B. M. Heede, Inc., Dept. C&E, 30-01 37th Ave., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 78.

#### New ripper points are longer, stronger

A new ripper point designed to increase ripping yardage has been introduced by the Construction Equipment Division of the Electric Steel Foundry Co. The production advantages of the point are said to be made possible by the radical length, narrowness, and sharpness of the design.



and a new Esco alloy—12S—which is specifically developed for ripping.

The extra length of the point shatters material well ahead of the ripper shank, greatly reducing shank wear. This feature, coupled with the flat pitch of the point design, reduces the drawbar load and sometimes allows the tractor to operate in a higher gear.

The point is offered in four lengths—14, 16, 18, and 20 inches.

For further information write to the Electric Steel Foundry Co., Construction Equipment Division, Dept. C&E, 2141 N. W. 25th Ave., Portland 10, Ore., or use the Request Card at page 18. Circle No. 63.

#### New chemical offered for ice, snow melting

A new ice and snow-melting chemical in the Melt line is offered by the Chem Industrial Co.

Available in pellet form, it is said to generate heat immediately upon contact with ice and snow, to not discolor or damage paved surfaces, and to leave no messy residue.

For further information write to the Chem Industrial Co., Dept. C&E, Brooklyn 9, Ohio, or use the Request Card at page 18. Circle No. 46.

## Fast work on rampart at Air Academy

OVERLAID PLYWOOD CONCRETE FORMS did a big job in a hurry at the Air Force Academy in Colorado Springs. The 10,000 ft. retaining wall that bounds two sides of the raised campus was formed at the rate of 70 lin. ft. daily. Large plywood panel assemblies cut time and cost because of their high rate of re-use. And the overlaid plywood formed such smooth concrete that it was possible to install granite surfacing over it with a minimum clearance and maximum simplicity of anchorage.

Wall height varies from 15½ to 33 ft. Along most of its length, counterforts on 14-ft. centers connect it with an anchor wall 18 ft. to the rear. Each 70-ft.-long section was concreted in three pours: first, footings; second, anchor wall and the lower 13 ft. of both counterforts and main wall; third, upper portions.

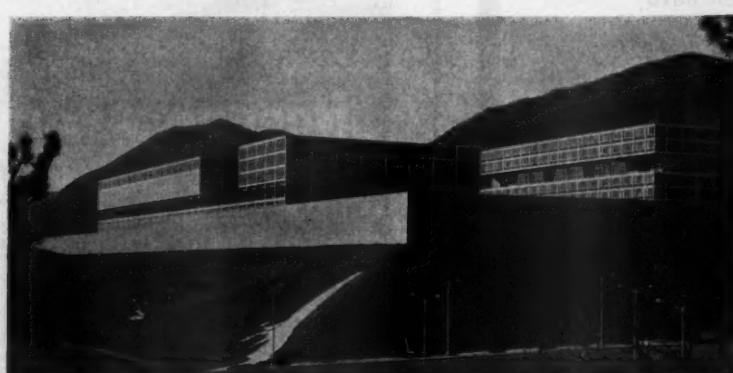
Form components were Symons Steel-Ply forms—2x8-ft. panels of high density overlaid fir plywood, encased in steel frames 2½ in. thick. They were pre-assembled into large units, two panels high and six wide, and placed by crane or from traveling scaffolds. Overlaid plywood was specified to produce ultra-smooth concrete and for its high re-usability. The contractor formed 600,000 sq. ft. of wall with 37,000 sq. ft. of plywood and has used the same forms many times since.

**ALWAYS SPECIFY DFPA-QUALITY TRADEMARKED PLYWOOD.** Concrete form grades include: INTERIOR PLYFORM®—standard concrete form grade, made with moisture-resistant glue, gives multiple (up to 12) re-uses; EXTERIOR PLYFORM®—standard concrete form grade, made with waterproof glue, gives up to 25 or more re-uses; OVERLAID EXTERIOR PLYWOOD—special panel with hard, glossy resin-fiber surfaces—forms smoothest concrete, gives up to 200 re-uses.

#### DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

—a non-profit industry organization devoted to research, promotion and quality control



In design and material, the granite-surfaced concrete wall is architecturally harmonious with the raised geometric campus it encompasses. Overlaid plywood forms insured smooth concrete and reduced costs.

## Claim "hazard-proof" carcass for new belt

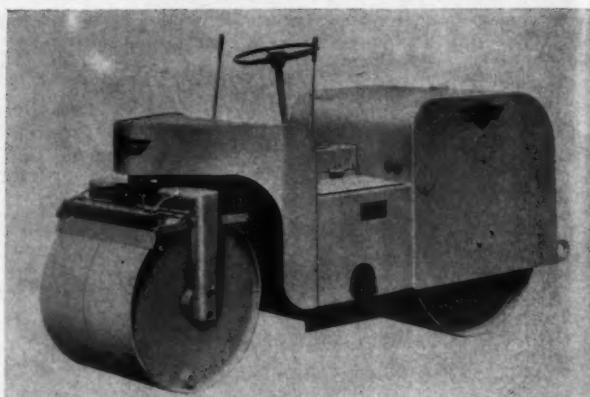
BostRon, a new conveyor material billed as "the belt with the hazard-proof carcass," has been announced by Boston Woven Hose and Rubber Division, American Biltite Rubber Co.

Said to represent an exclusive and revolutionary concept in conveyor belting, BostRon is claimed to be a proven remedy for many operating causes of premature belt failure including moisture, impact, fatigue, abrasion, chemicals, and acids.

BostRon belts combine this hazard-proof carcass with Balanced Belt Con-

struction (Boston's exclusive manufacturing process said to assure equalized ply stress) and protect it with a Dalon cover for maximum resistance to abrasion, cuts, tears, and aging. According to the company, this promises economy through low operating costs and prolonged hazard-proof belt life.

For further information write to the American Biltite Rubber Co., Boston Woven Hose and Rubber Division, Dept. C&E, P. O. Box 1071, Boston 3, Mass., or use the Request Card at page 18, Circle No. 6.



Less maintenance and more economical compaction are said to be the outstanding features of the Essick Model 320 tandem roller.

## Less maintenance claimed for new 3-ton roller

The new Essick Model 320, 3-ton tandem roller is designed and engineered to meet the requirements of faster, more economical compaction with less maintenance, according to the company. The new roller is said to offer a twofold saving of lower compaction costs and service-free performance with lifetime-lubricated bearings.

The Model 320 also offers the additional safety factors of greater overall visibility and flexibility, automotive-type steering, and a foot-operated automotive-type service and

parking brake located on the compression roll. The low center of gravity, with lower profile and wide rolls, is said to ensure greater stability and safe operation on slopes.

Less maintenance is claimed with the Essick-designed constant-mesh transmission with readily accessible clutches and heavy-duty roller chain and sprockets on the final drive.

For further information write to the Essick Mfg. Co., Dept. C&E, 1959 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18, Circle No. 24.

## SCHRAMM HEAVY PNEUMATRACTOR GIVES YOU COMPRESSED AIR ON A TRACTOR!

## ① like this

Schramm full 125 cfm compressor here

plus... husky tractor with backhoe and front end loader

## ② your tractor and operator are 100% self-sufficient

operator can break out concrete, tamp, drill - do any job with compressed air

same man can dig, scrape, haul, grade, fill... etc... etc...



## and here are doodles on what you save

Tractor	\$ 3,600
Loader	\$ 2,250
Backhoe	\$ 3,900
Schramm 125 cfm Compressor	\$ 3,720

if bought separately at average prices

\$13,470



Write for Catalog 5740. And see your nearest Schramm Dealer listed in the Yellow Pages.

## Schramm PNEUMATRACTORS

742 North Garfield Ave., West Chester, Pa.

Schramm, Inc., manufacturers of Rotadrills (Pneumatractor Mounted, Truck Mounted, Crawler Mounted), Air Compressors (Portable, Stationary), Self-propelled Air Compressors (Pneumatractors) and Booster Compressors

For more facts, use Request Card at page 18 and circle No. 329

## Solid steel pins for wood forms

Dee solid steel form pins with nail holes have a precision-machined point designed to drive through the hardest surface without bending, twisting, or breaking—thus making them especially effective in frozen ground.

Made of  $\frac{3}{4}$ -inch-diameter rods, and having 12 drilled nail holes, these

pins can be nailed securely to the form boards with only 1 or 2 nails, regardless of the position of the stake.

For further information write to Dee Concrete Accessories Co., Dept. C&E, 670 N. Michigan Ave., Chicago 11, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 32.



Neenah Foundry Company Plant No. 2, in production now.

## Neenah Announces....

the full-time operation of plant No. 2. The production from this 150,000 square feet facility

increases our daily maximum capacity to 500 tons of Gray Iron and Ductile Iron CASTINGS.



Informative and fully illustrated 168-page catalog will be sent promptly upon request.

## NEENAH FOUNDRY COMPANY

NEENAH • WISCONSIN

Chicago Office: 5445 North Neva Avenue, Chicago 31, Illinois

For more facts, use Request Card at page 18 and circle No. 330

Ripping frozen ground prior to loading with TS-260 motor scrapers on a reservoir project near Denver, an Allis-Chalmers HD-16 dozer enabled the grading contractor to continue work even during the coldest time of the year. The job involved excavating about 150,000 yards of dirt. For further information write to the Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 140.



### Design improvements in auger announced

The PolerBore auger has been improved to provide faster digging action, according to an announcement by the manufacturer, Trainer Associates, Inc.

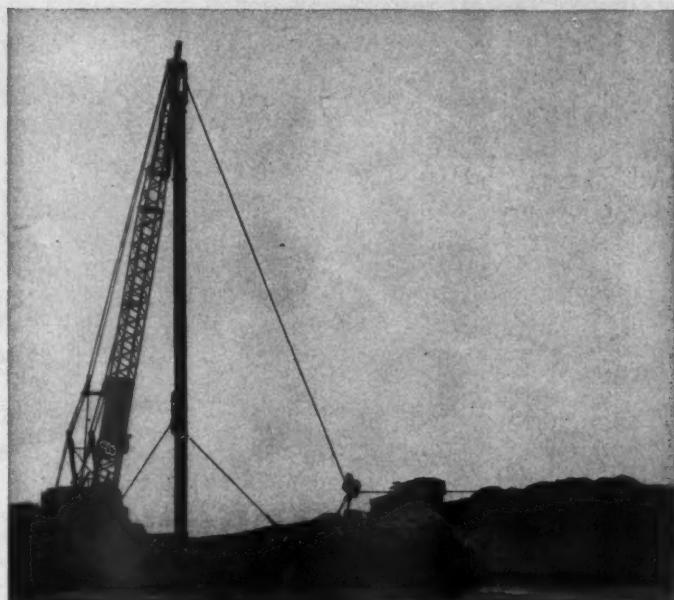
Lines of the PolerBore's penetrator have been redesigned to provide faster action and an increased down-thrust to the auger that permits driving into harder material, the company reports.

Trainer claims to have solved the problem of delays caused by the use of conventional nuts and bolts as hardware for augers. Previous mounting equipment has been discarded in favor of a Spirol pin, which is hammer-driven into the shank of the penetrator; the same simple hammer-driving action is used again for removal of the unit.

For further information write to Trainer Associates, Inc., Dept. C&E, New Castle, Del., or use the Request Card at page 18. Circle No. 8.



LESCHEN WIRE **PORTER** ROPE DIVISION  
H. K. PORTER COMPANY, INC.  
For more facts, circle No. 331



### Shoreline Reclamation by Crescent Scraper

Several million yards of sand and gravel are being used to extend the plant area of a Canadian steel company. Bottom-dump barges are used for the initial 20 ft. of fill. The additional 10 ft. below water and up to 15 ft. above lake level is built by redistributing the barge piles along the existing shore line.

The material is redistributed by a crane using a 5-yd. Crescent Scraper Bucket and carrier. On operating spans of up to 350 ft., the crane's hoisting line is used as a track cable. It is reeved through a block at the boom tip to a tail barge anchored offshore.

The barge swings on 200 ft. of anchor cable which permits a long period of crane operation before the anchor is shifted to a new location. The crane travels along the shore reclaiming material from a pie-shaped segment with the tail barge anchor as the vertex of the angle. The Crescent Bucket returns by gravity the full 350-ft. span. At average haul distances, it delivers 200 yd. per hr.

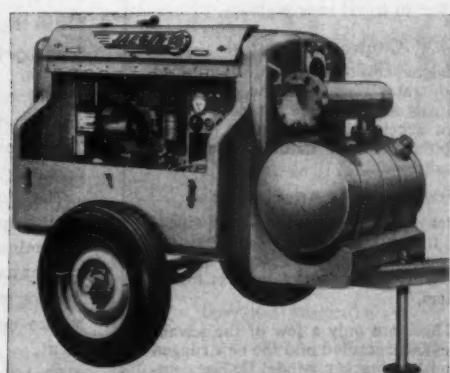
A Sauerman Crescent Scraper and carrier with a dragline crane is often the most economical solution to difficult excavating jobs. The normal reach of the dragline is greatly extended by using a track cable with a Crescent and carrier assembly. So equipped, its range is limited only by the spooling capacity of the drums.



Tubular mast supports 80 ft. boom on track cable setup. Tail barge in background. Load line is reeved through a Sauerman Fairlead on mast.

This arrangement has been used quite successfully for contract excavating jobs involving relatively small quantities of material. In many cases where unstable ground is encountered, the crane unit may be located on firm ground and the use of mats eliminated.

Find out how much you can extend the reach of your crane and increase its capacity. Write or call giving the make, model number and boom length of your machine. Field Report 231 and Catalog J. gives more information on Scraper operations with cranes.



### All the air you need for an 80 lb. breaker **JAEGER ROTARY "75"**

Easy starting in coldest weather because it has no pistons to drag. Costs less than the reciprocating model it replaces, yet runs smoother, delivers much cooler air, has fewer parts. Fully equipped. Big tool boxes, automatic blow-down valve. Ask your Jaeger distributor or send for Catalog.

**The Jaeger Machine Company, 701 Dublin Ave., Columbus 16, Ohio**  
75 • 85 • 125 • 250 • 365 • 600 • 900 CFM ROTARY COMPRESSORS

For more facts, use Request Card at page 18 and circle No. 332

OCTOBER, 1960 **ENR**

**SAUERMAN**

**BROS., INC.** 624 SO. 28th AVE.  
BELLWOOD, ILL.

Linden 4-4892 • Cable CABEX—Bellwood, Illinois

For more facts, use Request Card at page 18 and circle No. 333



The SP-120 features two 5 x 5-foot drums with wedge feet. It is said to be suitable for all types of heavy compaction, and meets all state highway specifications.

### Tamping roller exerts pressure to 550 psi

The Shovel Supply Co. announces the Ferguson Model SP-120 self-propelled tamping roller.

Equipped with two 5 x 5-foot drums with wedge-type feet, the machine is powered with a General Motors Model 4-71, 125-hp diesel engine and an Allison torque converter with final chain drive running in oil to the outer end of each drum.

Empty, the roller exerts a bearing pressure of 372 psi; ballasted with water, it exerts a pressure of 550 psi.

The Allison 3-speed transmission and torque converter provide speeds of approximately 2, 4, and 8 mph, both forward and reverse.

The Model SP-120 is equipped with powerful air brakes. All hydraulic and air controls are conveniently located at the operator's position.

For further information write to the Shovel Supply Co., Inc., Dept. C&E, Box 1369, Dallas 21, Texas, or use the Request Card at page 18, Circle No. 125.

### Space heater features indirect-fired design

An indirect-fired "vented" portable space heater has been introduced by the Champion Mfg. Co.

Designated Model 120, the heater is said to feature completely fume-free



## LIMA ROADPACKER MODEL D

Compacts Fast, Wide and Deep on Macadam, Gravel, Crushed Rock, Sand, Soil Cement and Stabilized Bases

### SAVE WITH SINGLE COURSE CONSTRUCTION

Lima Roadpackers meet the challenge — no other vibratory compactor gives you so many cost-saving job-speeding features . . . the reason why Lima Roadpackers are preferred by contractors throughout the world for fast production on highway and airport construction jobs.

Compare these profit-making features!

#### Heavy Vibrators

Six 437 pound vibrators deliver earth-shaking vibrations for deep, uniform densities. Vibrator units are completely sealed—no external moving parts. Vibrators are self-lubricated and need no daily maintenance. Required densities are quickly achieved. Macadam rock is tightly keyed, with screenings vibrated into voids in only three applications on most jobs. Compacts up to 600 tons per hour!

#### Infinite Speeds

20 feet per minute to 30 miles per

hour! A fluid motor propels the machine while compacting. A dial selector gives compaction speeds to match any job including new high production requirements within a broad range of 20 to 95 feet per minute. Roadpacker can be anywhere on the job at a moments notice. Heavy duty transmission provides fast highway travel speeds to next job.

#### One Lever Instant Reversing

Compacts forward or reverse with one lever control—no gear shifts—no de-clutching—no stopping. With the Lima Roadpacker you have no lost time and no depression in the material being compacted when machine is reversed.

#### Variable Working Widths

End shoes fold back for a selection of 4, 5 or 6 shoe working widths. Easily folded by the operator alone, the Roadpacker carries unused shoes ready for wider working widths at any

time. Folded end shoes permit Roadpacker to travel over highway.

#### Controls Up Front

Roadpacker controls are all grouped at operator's seat—engine gauges and controls are mounted on dash panel. Foot accelerator in addition to hand throttle provides natural roading of Roadpacker.

#### Widener Attachment

Extension arm works shoes in a widening trench to 11" below the existing pavement. Quickly adapted to various width widening work; replaces trench rollers.

These are only a few of the advantages incorporated into the new rugged Lima Roadpacker, Model D. For complete information, see your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

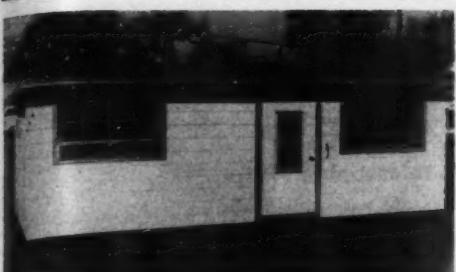
#### LIMA AUSTIN-WESTERN

Crushing, Screening and Washing Equipment

**LIMA** Construction Equipment Division, Lima, Ohio  
**BALDWIN • LIMA • HAMILTON**  
 Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 334





Midway Sales Co. offers this portable aluminum building as a job-site office.

1 x 24 feet to 12 x 60 feet. According to the manufacturer, the great advantage of the building is that it is portable from job to job. The structure is built on steel-frame skids and can be lowered onto a pier or solid foundation.

Styles available vary from an insulated shell, with floor, roof, and walls, to a completely finished, decorated, and furnished building. The building itself is finished in lifetime aluminum siding, on studs containing Fiberglas insulation.

For further information write to Midway Sales Co., Dept. C&E, Grapevine, Texas, or use the Request Card that is bound in at page 18. Circle No. 25.

#### New adjustable gantry works on rough terrain

A new model has been added to the line of Magic-Pole universal gantries.

Designed for hoisting heavy equipment on rough ground and other uneven surfaces, it has telescoping legs with up to 6 feet of height adjustment. The legs rest securely on steel base plates and can be adjusted to any width. Safety cables are provided to prevent over-spreading.



Other safety features include spring-loaded bolts and a self-leveling I-beam for off-center loads. The trolley is free to travel the entire length.

The Magic-Pole is light in weight, and folds compactly for hauling or storage. It can be converted to a wheeled gantry by adding casters and adjustable caster frames that are available as accessories. Three of the legs may be detached and used to form an adjustable tripod.

Magic-Pole adjustable gantries are available with steel or aluminum alloy I-beams in spans up to 30 feet, heights to 17 feet, and capacity to 4 tons.

For further information write to the B. E. Wallace Products Corp., Dept. C&E, Exton 62, Pa., or use the Request Card that is bound in at page 18. Circle No. 88.

## WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE



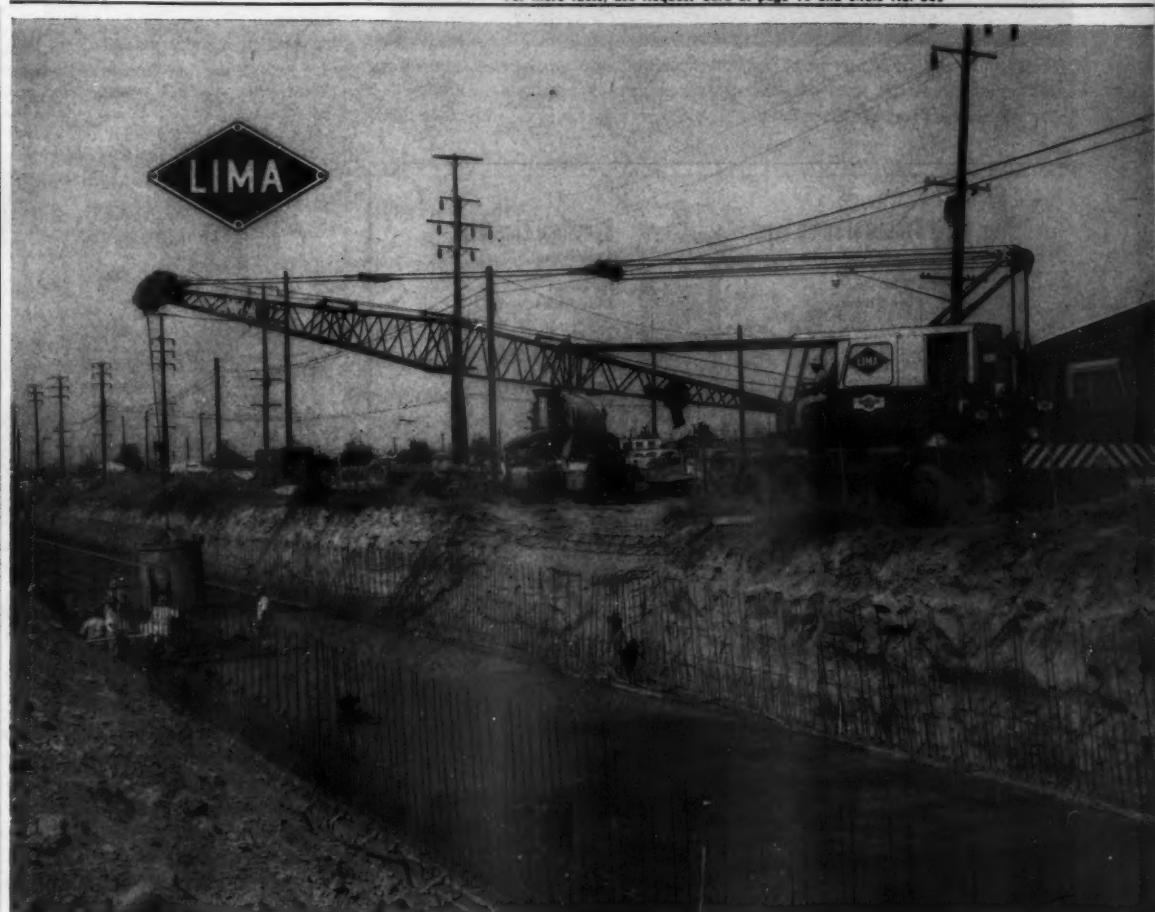
For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

**WINSLOW SCALE COMPANY**

P.O. Box 1198  
Terre Haute, Indiana

For more facts, use Request Card at page 18 and circle No. 335



Lima Truck Crane daily pours 320 yds. of concrete to speed construction of this Los Angeles County flood control channel.

## Has two Limas...buys a third!

"Six years' experience with two 34-T Limas made us decide to buy another Lima when we were in the market for a third truck crane," says master mechanic Rex Williams, of R. A. Wattson Co., N. Hollywood, Calif.

#### Low maintenance

"We favor Limas for several reasons—easy operating, precision air controls; rapid transportability; low maintenance requirements, and simplified design. I'd say that Limas are

top-quality machines, engineered and built for dependable high output!"

The main frame and carrier components of our newest Lima are of high-strength, low-weight "T-1" steel. This powerful rig needs no auxiliary aid to lift a 150-ft. boom, plus 30-ft. jib, from the ground up. It travels anywhere a truck can go—speeds up to 25 mph.

#### Pays to buy Lima

There's a Lima type and size for

every lifting or digging job! Truck cranes to 80 tons, 140 tons on crawlers; shovels to 8 yds.; draglines variable.

Learn why cost-conscious crane owners and operators agree, "It pays to buy a Lima!"

Ask us for all the facts and figures.

See your nearby Lima distributor. Or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

#### DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA** Construction Equipment Division, Lima, Ohio  
**BALDWIN · LIMA · HAMILTON**

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 336





Fruehauf's new telescoping platforms can adjust in increments from 35 to 55 feet over all to handle both general-purpose and extra-long materials.

### New trailer features telescoping platform

A telescoping platform trailer for handling special-length items such as prestressed concrete beams and structural steel girders is announced by the Fruehauf Trailer Co.

This new platform easily adjusts in increments from a closed position of 35 feet to a fully extended 55 feet

over all. Working as a general-purpose unit from a closed position, the platform has a rated capacity of 16,000 pounds for concentrated loads.

For further information write to the Fruehauf Trailer Co., Dept. C&E, Detroit 32, Mich., or use the Request Card at page 18. Circle No. 49.



#### Synclinal Sump Type

**Capacities:** 5-8-10-20-30-50-75 and 100 G.P.M.

**Pipe Sizes:**  $\frac{3}{4}$ "-1"- $\frac{1}{4}$ "- $\frac{1}{2}$ "-2"- $\frac{3}{4}$ " and 3".

**Connections:** Coupling—Male Nipple. By-pass Valve: Not Available.



#### Synclinal Line Type

**Capacities:** 5-8-10-20-30-50-75 and 100 G.P.M.

**Pipe Sizes:**  $\frac{3}{4}$ "-1"- $\frac{1}{4}$ "- $\frac{1}{2}$ "-2"- $\frac{3}{4}$ " and 3".

**By-pass Valve:** Not available. **Operating Pressures:** Up to 80 p.s.i.



#### Bonded Line Type

**Capacities:** 10-20-30-50 and 75 G.P.M.

**Pipe Sizes:** 1"- $\frac{1}{4}$ "- $\frac{1}{2}$ "-2" and  $\frac{3}{4}$ ".

**By-pass Valve:** Available with or without.

**Operating Pressure:** Up to 250 p.s.i.

**Operating Temperatures:** Up to 300°F.



#### In-Line Filter

**Capacities:** Up to 60 G.P.M.

**Pipe Sizes:**  $\frac{1}{2}$ "-1"- $\frac{1}{4}$ " and  $\frac{1}{2}$ " (at both inlet and outlet).

**By-pass Valve:** Available with or without.



#### Tandem Sump Type

**Capacities:** 10-16-20-40-60-100-150 and 200 G.P.M.

**Pipe Sizes:**  $\frac{3}{4}$ "-1"- $\frac{1}{4}$ "- $\frac{1}{2}$ "-2"- $\frac{3}{4}$ " and 3".

**Connections:** Coupling—Male Nipple.

**By-pass Valve:** Not available.

### MARVEL SYNCLINAL FILTERS

For  
**DEPENDABLE PROTECTION**  
on all Hydraulic and other  
low pressure circulating  
systems

Designed to give more ACTIVE filtering area—MORE dependable protection—MORE productive operation before cleaning is necessary. Meet J.I.C. Standards.

**FILTERING MEDIA** in all Marvel Filters is Monel wire cloth available in mesh sizes of 30-40-50-60-80-100-150 and 200 to meet your degree of filtration requirement.

**EASY TO CLEAN**—All Marvel Filters are easy to clean. Line type units operate in any position and may be serviced without disturbing pipe connections.

**OVER 800 O. E. M's. install Marvel Filters as Standard Equipment.**



#### Bonded Sump Type

**Capacities:** 10-20-30-50 and 75 G.P.M.

**Pipe Sizes:** 1"- $\frac{1}{4}$ "- $\frac{1}{2}$ "-2" and  $\frac{3}{4}$ ".

**Connections:** Coupling—“O” Ring—Male Nipple.

**By-pass Valve:** Available with or without.

### IMMEDIATE DELIVERY

A phone call can get your shipment on its way TODAY!

For further information on a specific type filter—  
Write—wire or phone

**MARVEL ENGINEERING COMPANY**  
7227 N. Hamlin Ave., Chicago 45, Ill.  
Phone: JUNiper 8-6823



CE-10

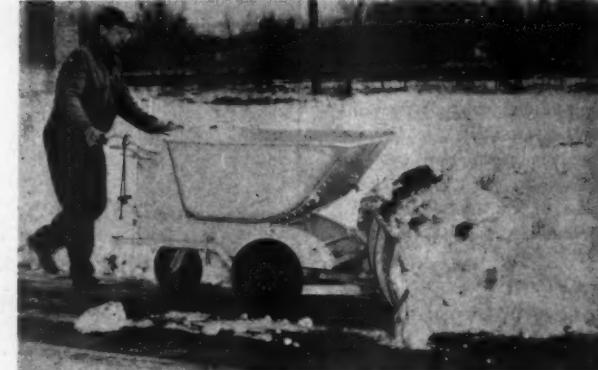
Please send me information on Marvel Filters as indicated:

Hydraulic Oils    Coolants    Lubricants    Fire Resistant Fluids  
 Water    Sump Type    Line Type    In-Line

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_

State \_\_\_\_\_

For more facts use coupon.



The 50-inch blade is easily attached to the Prime-Mover buggy. Sand can be carried in the bucket for spreading on icy areas.

### Snowplow attachment for concrete cart

A snowplow attachment is available for the Prime-Mover Model M-15B powered buggy.

Designed to minimize side thrust and to prevent snow packing on the moldboard, it is said to perform just as efficiently on wet as on dry snow.

The 50-inch blade is easily installed, and can be quickly dropped

off enabling the Prime-Mover to perform other material-handling jobs. When the plow is in use, the 10-cubic-foot bucket can be filled with ballast or sand for spreading on icy areas.

For further information write to The Prime-Mover Co., Dept. C&E, Highway 22-E, Muscatine, Iowa, or use the Request Card at page 18. Circle No. 47.

## BIGGEST NEWS IN SHOVELS



### RAZOR-LITE

The new lightweight shovel with the famous Razor-back "backbone" construction.

• The new RAZOR-LITE is made for the user who prefers a lighter shovel—the RAZOR-BACK for those who want a big, super-strong shovel.

• RAZOR-LITE like RAZOR-BACK, has the same 13 gauge "backbone" all the way from the top of the socket to the cutting edge, where all other shovels are thinner and wear out faster.

• Ask your supplier for RAZOR-LITE and RAZOR-BACK shovels, today.

**THE UNION FORK & HOE COMPANY, Columbus 15, Ohio**

For more facts, use Request Card at page 18 and circle No. 338

CONTRACTORS AND ENGINEERS



tooth built to penetrate the frozen ground. The carbide tooth blades had to cut not only through the solid ice but also through silt deposits formed in the ice. For further information write to the Skil Corp., Dept. C&E, 5033 Elston Ave., Chicago 30, Ill., or use the Request Card at page 18. Circle No. 128.

#### Two tractor attachments increase versatility

Two new tractor attachments—the Model AB-11 Thrift-Blade and the Thrift-Rake—have been announced by the Arps Corp.

Both of these versatile tools are quickly interchangeable on the same frame, and are designed for 1, 2, and 3-plow tractors using the 3-point hitch system. The combination Thrift-Blade-and-Rake accessory enables the tractor to handle jobs such as snow removal, shallow ditching, and road maintenance.

The Thrift-Blade weighs 312 pounds and measures 17 inches high and 72 inches long. It has seven forward angular positions, three reverse positions, three leveling adjustments, and is reversed merely by lifting a lock pin and rotating the blade.

Rough grading to fine raking may be handled with the Thrift-Rakes, which are available in 6 or 8-foot



Available in 6 or 8-foot sizes, the Arps Thrift-Rake handles rough grading to fine raking.

sizes. Optional single or dual-gage wheels are available to maintain consistent depth penetration on leveling jobs.

For further information write to the Arps Corp., Dept. C&E, New Holstein, Wis., or use the Request Card at page 18. Circle No. 135.

#### NEW-BURCH Dump Body Mounted SPREADER



##### A unique development in box-type spreaders

All operations are controlled by driver in the cab. He raises or lowers the spinner for variable widths of spread, and controls the volume flow of materials.

##### Spreads full width or half width on either side.

- Reliable 20½ hp motor.
- Bar flight conveyor belt.
- Precision built, oversize reduction worm gear drive.
- Sealed automotive type reduction gear operates spinner.
- Heat treated gears and shafts.
- Roller or ball bearings throughout.
- Hopper supported by heavy structural channel sills and has a sturdy sectional top screen.

**The BURCH**  
CRESTLINE, OHIO, U.S.A.  
corporation

For more facts, use Request Card at page 18 and circle No. 339

#### Power-shift transmission for material handling

A new power-shift transmission is announced by Minneapolis-Moline.

Designed for material-handling equipment requiring full-torque shifting and full-reversing characteristics, the 2-speed transmission with integral axle has an integral 11-inch torque converter built into the bell housing and gives full-torque forward and reverse shifting through directional clutches. The stall torque ratio of the converter is 2:1.

The high and low ranges of the transmission are operated by hydraulically actuated multiple disk clutches.

The unit is designed to function with an engine developing a maxi-

mum torque of 300 pound-feet. The inching valve is operated by the brake hydraulic pressure for precision material-handling work.

Over-all weight of the new transmission is approximately 425 pounds. It measures 19 inches in over-all length, 17½ inches in width.

The 7½-gpm hydraulic pump, driven at engine speed, provides ample volume and pressure for the converter and for the directional and speed clutches.

For further information write to the Minneapolis-Moline Co., Dept. C&E, Hopkins, Minn., or use the Request Card at page 18. Circle No. 48.

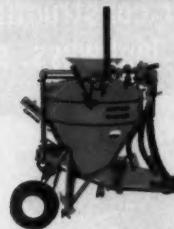
#### The Most Economical Way to Handle Concrete

## THE "AIR EXTRUSION" METHOD

with



### CONCRETE PLACERS



#### ALL OF THESE JOBS

- Open Pours • Hard-to-Get-to-Pours • Tunnel Linings
- Pressure Grouting • Blowing Sand or Pea Gravel Backfill
- Transporting Concrete Into Common Receiving Bins

#### GET DONE FASTER, BETTER, MORE PROFITABLY WITH THESE "ADVANCED DESIGN" FEATURES

- Handles All Standard Mix Structural and Lightweight Concretes
- Easy to Operate
- Portability To and From the Job
- Highly Flexible
- Ideal for Big and Small Jobs—Production Range up to 35 Cu. Yds. Per Hour
- Mobility On the Job
- Low Cost.

To Help You  
to More Profits

Let AIRPLACO's Engineering and Technical Staff assist you. Through years of experience on all kinds of jobs, we can often recommend methods and techniques that will save you time and money. Next time you have a concrete job... call on AIRPLACO. There's no cost or obligation of course, so write, wire or phone when you have a problem.

Send for FREE BROCHURE and COMPLETE LINE CATALOG

**AIRPLACO** AIR PLACEMENT EQUIPMENT CO.  
1007 WEST 25TH ST. • KANSAS CITY 6, MO.

For more facts, use Request Card at page 18 and circle No. 340



A control panel allows for one-man operation of the Loadmor mobile carrier. A load-lock device operates automatically when the platform is returned to transport position.



**BITUMINOUS DISTRIBUTOR**  
Front or rear mounted for truck or trailer . . . with pressure metering.



**MAINTENANCE UNIT**  
Heating and spraying unit . . . 2-wheel or truck mounted.



**STREET FLUSHER**  
Truck mounted as shown or 2-wheel model for towing.

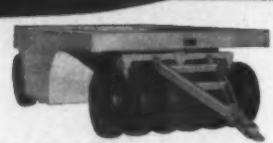


**ASPHALT KETTLE**  
2-wheel pneumatic mounted . . . hand or power spray.

Smartest buys of the year  
**ROSCO ROAD EQUIPMENT**  
 for construction and maintenance of  
 highways, streets and airports



**ROLLER**  
9-wheel self-propelled . . . torque converter, power brakes and steering.



**ROSCO-FACTOR**  
9 or 13 wheel roller . . . 90 to 125 cubic feet capacity.



**ROAD SWEEPER**  
Two-way . . . power driven . . . full 4-wheel trailer mounted.



**STREET CLEANER**  
Power driven . . . for sweeping and flushing.

Years of use by satisfied customers prove Rosco machines are built to last . . . built to turn out a top-notch job every time. For full details on the dollar-saving specifications ask for literature on the equipment you need.

**ROSCO**  
MINNEAPOLIS

**ROSCO MANUFACTURING CO.**  
3118 SNELLING AVE. • MINNEAPOLIS 6, MINNESOTA

Bituminous Distributor  
 Maintenance Unit

Street Flusher  
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Roller  
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Road Sweeper  
 Street Cleaner

Please send literature checked below to:

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Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon or Request Card at page 18 and circle No. 341

### Heavy-equipment hauler in lengths to 20 feet

A new Loadmor mobile carrier for heavy construction machinery, featuring low loading angle and one-man operation, is announced by The Loadmor Co.

The platform is powered by a PTO-driven pump which operates at up to 2,000 psi and delivers up to 8 gpm.

On the hydraulic drum winch, a control valve permits cable control to less than 1/100 inch, forward or reverse. Should the hose break, the drum winch automatically locks the load in hold position.

The unit is equipped with a Load-

mor truck hoist, which is situated at the front of the platform, giving added strength and allowing platform dumping. The 4-way approach gate is hydraulically operated; it locks in four convenient positions to meet various loading and transporting requirements.

Platforms are available in 16, 18, and 20-foot lengths.

For further information write to The Loadmor Co., Dept. C&E, P. O. Box 125, Sioux City, Iowa, or use the Request Card that is bound in at page 18. Circle No. 72.

### Handle-grip controls aid drill operation

A compact push-feed rock drill that can be manipulated into any position by handle-grip controls has been introduced by Thor Power Tool Co.

According to the manufacturer, the drill's balanced design permits the operator to manipulate the drill; rotate the feed-leg pressure control valve to raise the drill; and operate a push-button thumb control to lower the drill without removing his hand from the handle grip.

The Model 330 drill is available with manual or power-retracted interchangeable feed legs, which are attached to the drill with a single-adjustable tension nut. The drill can be locked in line with the feed leg for use as a stopper or for roof-bolting operations. It can be operated with full blowing by rotating the throttle valve to extreme forward position when the tool is used either as a wet or dry drill. No parts substitution is required for the handling



Thor's new push-feed rock drill permits the operator to control air and water pressure and position the feed leg with handle-grip controls.

of wet or dry operations.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the Request Card at page 18. Circle No. 26.

**BIG JOB...SMALL ENGINE?**

**YANMAR**

DIESEL DOES IT!



SAFE  
COMPACT  
DEPENDABLE  
VERSATILE



4 CYCLE — AIR COOLED  
Single Cyl. 2 to 4 1/2 BHP  
2000-3000 RPM. LIGHT  
WEIGHT — EASY STARTING  
Especially recommended for PORTABLE &  
EMERGENCY EQUIPMENT

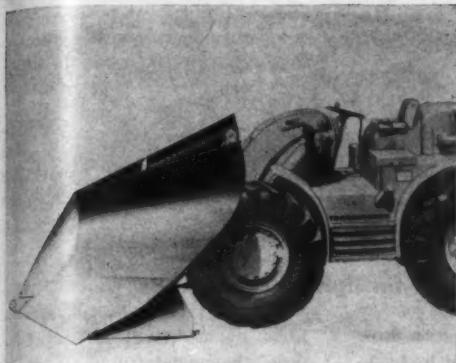
4 CYCLE — WATER COOLED  
Single Cyl. 2 to 8 BHP  
in 2000 RPM range. COM-  
pletely self-contained  
Easy starting — smooth  
running for GENERAL PUR-  
POSE APPLICATIONS.

For literature and dealer information write:  
**CONTINENTAL MACHINERY CORP.**

19402 So. Susana Rd., Compton, Calif.

Mailing Address: P. O. Box 5309, Long Beach 5, California

For more facts, use Request Card at page 18 and circle No. 342



Featuring efficient operation in heavy, wet, or dry snow, the Omaha V-type snowplows are said to be easily installed.

#### Offer V-type snowplows for front-end loaders

Omaha Steel Works announces two V-type snowplows designed for the Caterpillar 944 and 966 Traxcavators.

Features are said to include ease of installation and a moldboard contour that operates efficiently whether used

in heavy, wet, or dry snow.

For further information write to the Omaha Steel Works, Dept. C&E, 609 S. 48th St., Omaha, Nebr., or use the Request Card at page 18. Circle No. 126.

#### Offer wired, portable communications system

A new wired communications system has been announced by the Seiscor Division of the Seismograph Service Corp.

This new system is the latest addition to the firm's Telepath portable communications line, and provides intelligible communications under most noise conditions. It utilizes transistorized amplifiers in combination with a variety of earphone-microphone headsets to form wearable units for almost any type of operation requiring wired person-to-person communications.

Two amplifiers are available in the system. One is for low to medium background noise conditions, and the other is for medium to high background noise conditions. Both are

lightweight, belt-clip units with self-contained batteries and controls.

Either Telepath amplifier may be used with four different headsets offered, with all units providing complete, hands-free operation. A special feature is the volume control, which permits the user to choose the most comfortable voice level.

For most applications, the distance between separate units is unlimited, and party-line operations with three or more units working together is possible.

For further information write to the Communications Section, Seiscor Division, Seismograph Service Corp., Dept. C&E, P. O. Box 1590, Tulsa, Okla., or use the Request Card at page 18. Circle No. 36.

## PLAN NOW!

6 to 60  
ton models  
at low cost

Plan now for delivery of your asphalt plant when YOU need it. Don't risk delayed delivery next spring. Get your share of profitable winter and early spring business! Send for free catalog.



**White**  
asphalt  
plants

White Mfg. Co., Elkhart 9, Indiana  
Please send catalogs on low-cost asphalt plants.

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City \_\_\_\_\_ State \_\_\_\_\_

For more facts, use coupon or Request Card at page 18 and circle No. 343

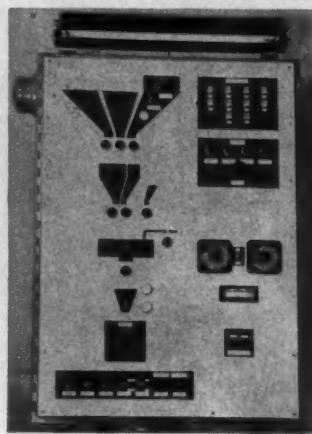
#### Concrete-block-plant automation equipment

Engineered Equipment, Inc., announces a new line of automation equipment for block and concrete-products plants.

This control equipment is matched with the firm's line of air-operated fill gates and metering devices, and accurate electrical and material flow control are combined in the system.

All component parts are easily accessible and simple to service.

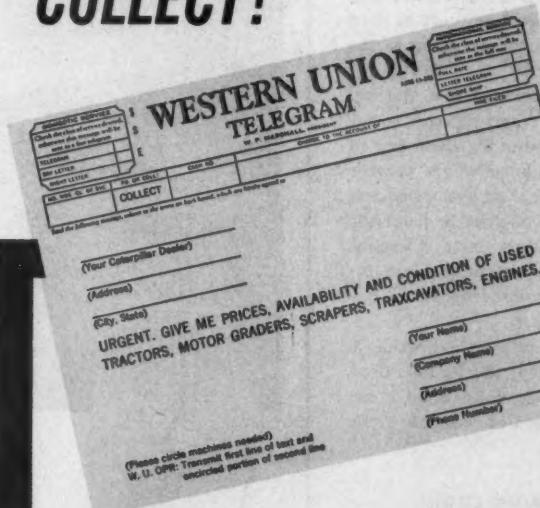
For further information write to Engineered Equipment, Inc., Dept. C&E, 1001 Linden Ave., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 136.



# SAVE \$\$\$

## USED EQUIPMENT SALE

### SEND A WIRE TODAY— COLLECT!



Phone, wire collect—see your Caterpillar Dealer now! Take advantage of the year's best buys in used equipment!

All makes . . . all models . . . all priced to sell in a hurry. Best machines are backed by "Bonded Buy" protection. Financing available to match your needs. Work with machines carefully checked and reconditioned with genuine parts and factory-approved methods. Get the equipment you need to finish your work on schedule.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**NO TIME TO LOSE.  
WIRE, PHONE OR WRITE.  
BUT DO IT TODAY.**

For more facts, use Request Card at page 18 and circle No. 344



High visibility, 5-piece separable construction, and a roof escape hatch are features of the operator cab developed for winter weather conditions by Allen Industrial Products, Inc.

#### New tractor cab offered for cold-weather work

Safe and continuous construction work at sub-zero temperatures and in otherwise severe weather conditions is said to be assured with a new operator cab offered by Allen Industrial Products, Inc.

The high-visibility cab uses a sturdy but separable 5-piece construction for flexibility in various conditions. It was designed especially for the Caterpillar D-2 tractor, but cabs of similar construction could be used on other machines, according to the manufacturer.

The cab's aluminum roof and top body assembly reportedly can be removed in 3 minutes for operations in dangerous terrain or where weather is not too severe. The windshield and doors are also detachable from the welded steel lower body assembly. Top and bottom assemblies are insulated and sound-deadened for operator comfort.

For further information write to Allen Industrial Products, Inc., Dept. C&E, Menomonee Falls, Wis., or use the Request Card at page 18. Circle No. 22.

#### Two-way hand radio for construction sites

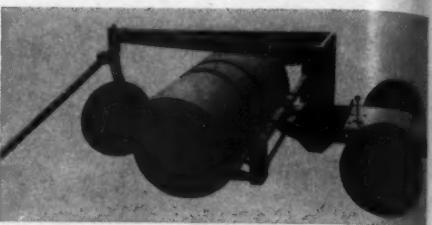
A portable two-way radio said to be ideal for construction site communications has been introduced by the Kaar Engineering Corp.

Smaller than a quart milk carton and equipped with a collapsible antenna, the fully transistorized new Kaar TR330 Hand-D-Phone offers simple, one-hand operation and a range of from  $\frac{1}{2}$  mile up to several miles, depending on terrain.

The less than 2-pound unit is equipped with a large speaker for loud, clear reception, an earphone jack for private listening, and an exclusive "squench" device that keeps the instrument silent until signals are received.

For further information write to the Kaar Engineering Corp., Dept. C&E, 2995 Middlefield Road, Palo Alto, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 89.

Little Giant's traction-drive sweeper is powered from its rear wheels, and it may be towed by a truck, tractor, or other similar vehicle.



#### Traction-drive sweeper for light or heavy jobs

A newly designed traction-drive road sweeper is announced by Little Giant Products, Inc.

Light in weight and simple to operate, the sweeper can be easily and quickly attached to and towed by

truck, tractor, or similar type of vehicle, the manufacturer reports. It has been designed especially for sweeping in geographical areas where heavy concentrations of dust, sand, dirt, grit, and other air-borne objects



#### NOW! MONMOUTH OFFERS COMPLETE ENGINE BEARING COVERAGE TO THE CONSTRUCTION FIELD



#### Clevite 77 BEARINGS

CLEVITE 77, with patented cast copper lead tri-metal construction, provides greater load carrying capacity, longer life.

CLEVITE 77 (the bearing preferred by O.E.M.) saves time and money with more hours of service, lower maintenance costs.

#### Clevite ALUMINUM BEARINGS

Now! A full line of Steel Backed and Solid Aluminum bearings (identical to original equipment in design and materials) is available for ALL special earthmoving equipment.

A complete range of undersizes will give you up to four regrinds, extending crankshaft life.

The coverage, availability and service you receive from your NAPA Jobber makes it easy for you to use the best—CLEVITE—from the world's leading original equipment manufacturer.

For your nearest jobber, contact one of the NAPA warehouses listed on opposite page

#### MONMOUTH Engine Bearings

CLEVITE SERVICE: Cleveland Graphite Bronze • Division of Clevite Corporation • Cleveland 3, Ohio

For more facts, use Request Card at page 18 and circle No. 345



CONTRACTORS AND ENGINEERS

prevail, causing frequent and expensive repairs to motorized sweepers.

The Little Giant traction sweeper is powered from the rear wheels, with ratchet-type differential drive. A Warner 3-speed transmission provides a choice of brush speeds for light, medium, and heavy sweeping jobs.

Brushes come in 6, 7, and 8-foot lengths, and are of tough, long-wearing palmyra fiber. Steel brushes are available, if requested.

For further information write to Little Giant Products, Inc., Dept. C&E, 1530 N. E. Adams St., Peoria, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 12.

## Monmouth ENGINE BEARINGS



**NAPA Atlanta**  
200 Baker Street, N.E.  
P.O. Box 6000, Station H  
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600 East Washington Blvd.  
Los Angeles 15, California  
**NAPA Louisville**  
211 East College  
Louisville 2, Kentucky  
**NAPA Memphis**  
100 East Georgia Avenue  
Memphis 2, Tennessee

### All-new 1960 line of heaters announced

The Aeroll Products Co., Inc., has announced its new 1960 line of heaters. Three sizes of oil-fired heaters are offered along with a new LPG and natural-gas 200,000-Btu heater. A wide range of gas-fired salamanders is also available.

The oil-fired heaters are offered in the following sizes: 125,000, 250,000, and 500,000 Btu. They feature stainless-steel combustion chambers, and all sizes are portable on wheels. Thermostats are standard on the two larger sizes.

The Model HE-SG-200 is fired by LP gas and has an output of 200,000 Btu. It weighs 45 pounds and is equipped with a thermostat as standard equipment. Safety controls are provided to shut off gas supply in the event of power or pilot-light failure. This unit is also available for burning natural gas.

For further information write to Aeroll Products Co., Inc., Dept. C&E, 9 Wesley St., South Hackensack, N.J., or use the Request Card at page 18. Circle No. 104.

### New crushing plant has two-hammer rotor

A new portable Impact Master plant has been introduced by the Universal Engineering Corp.

This new plant features a single, two-hammer rotor, and is mounted on a rugged I-beam, gooseneck frame with tandem axles in the rear and either trucks or fifth wheel available for transportation.

For further information write to the Universal Engineering Corp., Dept. C&E, 625 C Ave. N.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 35.



The Aeroll heaters have positive-displacement fuel pumps and are equipped with fuel filters as standard equipment.

"There is hardly anything in the world that someone cannot make a little worse and sell a little cheaper — and the people who consider price alone are this man's lawful prey."

—John Ruskin

*you can buy a cheaper engine...  
but you can't buy a better one*

## WAUKESHA ENGINES AND POWER UNITS

Famous in Construction Work for 40 Years

See your Waukesha distributor, or consult us concerning your power needs.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN  
Factories at Waukesha, Wisconsin, and Clinton, Iowa  
New York • Tulsa • Los Angeles

For more facts, use Request Card at page 18 and circle No. 347



Your **NAPA** jobber  
is a Good Man to Know!

LESCHEN WIRE **PORTER** ROPE DIVISION  
H. K. PORTER COMPANY, INC.

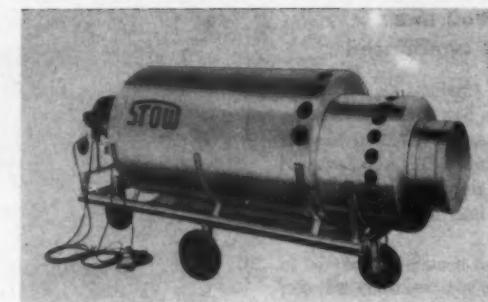
For more facts, circle No. 346

**Space heater produces 1 million Btu/hour**

The Stow Mfg. Co. offers an oil-fired portable space heater that produces 1 million Btu/hour of heat. Compact and ruggedly built, the Model S1000 has a built-in thermostat.

Twin nozzles inside the combustion chamber burn the fuel—either kerosene or No. 2 fuel oil—completely, producing maximum heat without odor or fumes. The S1000 portable heater also has a twin-disk air control that compensates for variations in fuel, temperature, or altitude, making maximum combustion possible under widely varying conditions.

A low-fuel cutoff switch is pro-



vided, as well as an electric solenoid valve to prevent fire hazards from possible fuel leaks. A safety control is also provided to shut off the motor in case of flame failure.

The S1000 is furnished with two

8-foot hoses to attach to separate oil tanks (50-gallon drums may be used).

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the card at page 18. Circle No. 129.

count on

## HERMAN NELSON PORTABLE AIR HEATERS

everybody else does!



**\$14 MILLION FREMONT CANYON POWER PROJECT**, now nearing completion in Wyoming, has used Herman Nelson "Thrifty" heaters through two severe winters to avoid job shut-downs. "Thrifty" heaters proved their ability to "take it"—gave continuous service under tough field treatment, rough terrain and weather. Contractors: Coker, Kiewit, Cunningham.



**PAN AMERICAN** relies on Herman Nelson portable heaters for cold weather operations at Idlewild Airport. Safe Herman Nelson units meet the strict specifications of Pan American and Port of New York Authority.



**IN SUB-TROPIC MIAMI**—a big job for portable heat! The job—thoroughly drying out 35 concrete silos at Lehigh Portland Cement Co.'s modern Miami plant. Clean, uncontaminated heat was supplied by a battery of "Utility" heaters. Contractors: Walsh, Perini, Rooney Companies.

For more facts, use coupon or Request Card at page 18 and circle No. 348

**Engine, bucket options for tractor shovel**

A General Motors 134-hp diesel engine, a range of bucket sizes, and a new snowplow attachment are now available as optional equipment for the Michigan 125A tractor shovel, according to the Construction Machinery Division of the Clark Equipment Co.

The new diesel engine is GM Model 4-71. The 125A is also available with a Waukesha Model 135GK 127-hp gasoline engine or a Cummins Model JN 122-hp diesel unit.

In addition to the standard 2½-cubic-yard excavating bucket, optional buckets ranging in capacity from 1½ to 4 cubic yards are now available for handling a variety of stockpiled materials. Included is a 2½-cubic-yard rock bucket.

Versatility of the 125A is increased by a rotary snowplow attachment that can handle up to 1,200 tons of snow per hour.

For further information write to the Clark Equipment Co., Construction Machinery Division, Piperton Plant, Dept. C&E, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 23.

**Crawler-mounted trencher in 9, 12-hp models**

The Charles Machine Works, Inc., announces a new crawler-mounted Ditch Witch trencher series. The machines are available in all M series in either 9 or 12-hp models.

Completely self-propelled, these crawler trenchers are said to be especially suited to applications where traction or flotation is marginal, or where a considerable amount of maneuverability is required.

Because of the additional weight,



**FREE**  
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8 page book  
"TAILOR YOUR  
WEATHER"



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Portable Products Dept. PH-39, Louisville, Ky.

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• Starts diesel and gasoline engines (from the smallest to the largest) down to 65° F. below zero • Starts in seconds • Excellent in humid weather too • Millions of cans sold • See your automotive jobber or farm equipment dealer.

\*The inventors of spray starting fluid. Patent No. 2,948,595

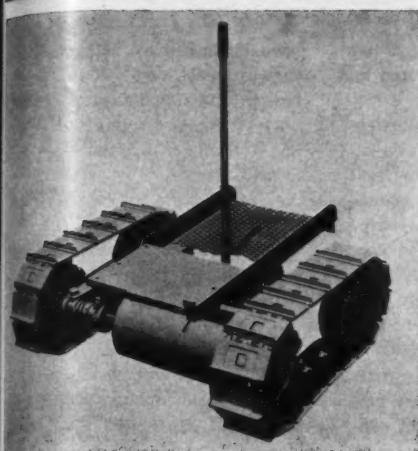
Ask for the can with the "balky donkey" trademark

**SPRAY PRODUCTS  
CORPORATION**

P.O. Box 1988 • Camden, N.J.

For more facts, circle No. 349

**CONTRACTORS AND ENGINEERS**



The new Ditch Witch trencher is self-propelled and equipped with a steering device that makes it exceptionally maneuverable.

they are well adapted to digging in frost conditions and rocky soil conditions, states the manufacturer.

The Ditch Witch crawler trencher is also recommended for digging foundation footings.

For further information write to The Charles Machine Works, Inc., Dept. C&E, Perry, Okla., or use the Request Card at page 18. Circle 51.

#### Lubricating oil for diesel, gasoline engines

A new lubricating oil for diesel and gasoline engines is offered by the California Oil Co.

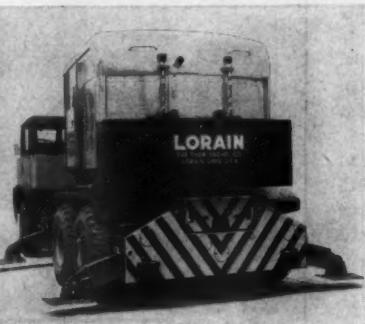
Known as Super RPM Delo Special, the oil is fortified with special detergent-action additives, corrosion and oxidation inhibitors, and an effective defoaming agent. According to the manufacturer, it is especially designed to control the negative effects of high-sulphur diesel fuel.

For further information write to the California Oil Co., Dept. C&E, 1200 State St., Perth Amboy, N. J., or use the Request Card at page 18. Circle No. 45.



"Tilt-Frame" method used to erect 14 buildings. In a patented process, developed by Garmon Construction Company of Fort Worth, reinforced concrete wall sections are poured into steel frames and put in place less than 24 hours after pouring, cure on the job. Fast, "Power-Set" Outriggers team up perfectly with this fast construction procedure.

Moto-Crane moves up fast as building grows. "Power-Set" Outriggers are partially retracted for ground clearance in 20 seconds. The Moto-Crane moves along for the next lift, and the outriggers are set in another 20 seconds. Maximum capacity and stability for every lift . . . no lost time.

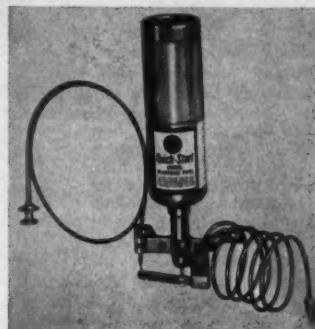


#### Diesel starting aids for sub-zero weather

The Turner Corp. announces a new series of Quick-Start diesel starting aids for fast, safe starting in temperatures as low as 65 degrees below zero.

Measured-shot units automatically measure and inject 4 c.c. of starting fluid into a single or split manifold engine right from the cab. These starting units are available in single or double manifold, single or double orifice, measured or continuous shot, or any combination of these.

For further information write to The Turner Corp., Dept. SP, Dept. C&E, Sycamore, Ill., or use the Request Card at page 18. Circle No. 42.



Turner units are said to give fast, safe starting in temperatures as low as 65 degrees below zero.



## MOTO-CRANE SETS OUTRIGGERS IN 56 SECONDS TO ERECT CONCRETE WALL SECTIONS

"Power-Set" Outriggers—Lorain's pace-setting development—speed building at Richland Industrial Park in Fort Worth, Texas.

When Gorbett Brothers of Fort Worth, owner of five Lorains, moves in with a 35-ton Lorain Moto-Crane MC-530W to erect reinforced concrete wall sections, the operator can position the "Power-Set" Outriggers in less than a minute. During an 8-hour day this Moto-Crane handles 16 twenty-ton panels. This means many moves a day with a new outrigger set-up each time . . . but it is a breeze with Lorain "Power-Set" Outriggers.

Quick leveling in tight quarters—Each outrigger is independently controlled . . . adjusts to proper spread for

working alongside walls. Each adjusts automatically to sloping or uneven ground. Machine is always level.

Positive security with wedge locks—After the four independently controlled and hydraulically powered curved beams move into position, wedge locks automatically take over. No hydraulic pressure is needed to hold outrigger beams in the extended working position.

A Lorain Moto-Crane is the fastest way to get to the job. Lorain "Power-Set" Outriggers provide the fastest way to move around on the job. See your Lorain distributor today, or write direct for a booklet.

\*Patented

THE THEW SHOVEL COMPANY, LORAIN, OHIO

## LORAIN® ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio . . . PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from  $\frac{1}{2}$  to  $2\frac{1}{2}$  yard capacity. Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes. Rubber tire front-end Moto-Loaders in  $1\frac{1}{2}$ - and 2-yard models . . . OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

For more facts, use Request Card at page 18 and circle No. 351

RELTON CORPORATION

57 N. LOTUS AVE., PASADENA, CALIF.

For more facts, circle No. 350

OCTOBER, 1960

Link-Belt Speeder's new HC-77 Zephyrcrane has a work capacity of 25 tons, yet is compact enough for legal highway travel without major stripping.



## HERE'S HOW YOU CAN GET MORE DITCH PER DOLLAR!



Photos above show the versatile Vermeer 4T POW-R-DITCHER digging a gas main trench. Manufactured for the light construction field, this small, inexpensive ditcher is excellent for water and cable lines and home foundation footings.

RUGGED, LOW COST 4T

## POW-R-DITCHER

DIGS 6"-14" WIDE  
DOWN TO 4 1/2" DEEP

The small powerful, ruggedly built Vermeer 4T POW-R-DITCHER is designed especially for contractors, municipalities, utilities, institutions and custom operators. Only 46" wide, the 4T is fast... and highly maneuverable. One-man operated, the POW-R-DITCHER is self-propelled, has two-way dirt conveyor and hydraulic track drive. Handles most ditching jobs at a fraction of the cost of more expensive ditching machinery.

IDEAL FOR LAYING GAS PIPE, WATER AND CABLE LINES AND FOR HOME FOUNDATION FOOTINGS

The 4T POW-R-DITCHER is the finest buy on the market when you want a low cost investment, low maintenance cost and high production. Capable of handling most ditching jobs, the 4T is a real workhorse!

Please send me FREE information and prices on the complete line of self-propelled Vermeer POW-R-DITCHERS.

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CITY \_\_\_\_\_ STATE \_\_\_\_\_

**VERMEER MFG. CO.**

1627 W. WASHINGTON, PELLA, IOWA

For more facts, use coupon or circle No. 352

## Diesel starting device has automatic shutoff

The Phillips Mfg. Co. has announced a new diesel starting device called the Zero Start fluid injector.

The new unit is engineered to fit any diesel application—truck, tractor, or standby—and has a thermostatically controlled automatic shutoff, which reportedly makes it impossible to use the unit after the engine reaches operating temperature.

The starting-fluid injector is said to be safe and easy to use. When the dashboard-mounted push-button control is pressed, an electric solenoid releases the Zero Start starting-fluid formula into the intake manifold. The device can be quickly installed and is adaptable to 6, 12, and 24-volt systems.

For further information write to the Phillips Mfg. Co., Dept. C&E, 8200 Grand Ave. South, Minneapolis 20, Minn., or use the Request Card at page 18. Circle No. 10.



LESCHEN WIRE PORTER ROPE DIVISION

N. K. PORTER COMPANY, INC.

For more facts, circle No. 353

## Add new 25-ton model to truck-crane line

The HC-77 Zephyrcrane, a 25-ton truck crane, has been introduced by the Link-Belt Speeder Corp.

A working weight of approximately 56,000 pounds and an 8-foot over-all width are reported to make legal highway travel with the crane possible in most areas without major stripping. However, when the need does arise, the counterweight, both front and rear double-box outriggers, and full-width sliding beams may be easily removed.

Features available on the carrier include power steering, screw-type outrigger jacks and lightweight pontoons, a completely independent emergency brake system, powerful air-ap-

plied digging brakes, generous storage compartments on both running boards, and full diamond-plate rear fenders. Straight-through drive with an inter-axle differential, featuring a lockout device to provide the increased traction needed for off-the-road travel, is also provided.

The upper machinery, with minor exceptions, is exactly the same as found on the 30-ton HC-78, and basically like that on all other models of the L-B truck-crane line.

For further information write to the Link-Belt Speeder Corp., Dept. C&E, 1201 Sixth St. S.W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 14.

## Where SPECIFICATIONS call for . . . .

### HIGH DEGREE SOIL COMPACTION



## BARCO RAMMERS are THE ANSWER!

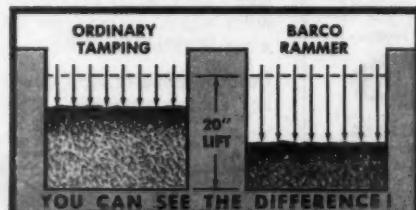
YOU can't get high degree SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around foundations, and in trenches.

**ONE MAN OPERATION**—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

**ASK FOR A DEMONSTRATION**—We will be glad to arrange a demonstration for you; see our nearest distributor or write.

SEND FOR A COPY OF CATALOG 621.



Sold and Serviced by the Nation's Leading Distributors

**BARCO MANUFACTURING CO.**  
518 L Hough Street • Barrington, Illinois

BARCO RAMMER for High Degree Soil Compaction  
BARCO-VIBRA TAMP for Granular Fill and Bituminous Surfacing

For more facts, use Request Card at page 18 and circle No. 354

CONTRACTORS AND ENGINEERS

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The new Stow double-flange vibrating screed is available in any length from 8 to 50 feet.



Operating a concrete batching plant to supply their curb, gutter, and general building construction needs has proved a profitable joint venture for two San Jose, Calif., contractors. Located in an area containing three other ready-mix facilities within a distance of  $\frac{1}{2}$  mile, the Century Concrete Co. plant, manufactured by the Noble Co., is said to supply the contractors' own requirements with exceptional efficiency. Equipped for automatic cement batching, metered water, and other quality controls, the high-speed plant reportedly batches 7 cubic yards in only 2½ minutes. It has overhead storage for 270 tons of aggregates, and separate overhead storage for 500 barrels of cement. For further information write to the Noble Co., Dept. C&E, P. O. Box 1979, Oakland, Calif., or use the Request Card at page 18. Circle No. 60.

#### New vibrating screed has adjustable length

Stow Mfg. Co. has announced a new vibrating screed that is available in any length from 8 to 50 feet, making it possible to easily strike off stiff mixes on any slab and with any down.

Among features said to make this new DF screed unique is a 2½-hp gear-driven vibrating unit that is mounted on the beam and has an adjustable amplitude feature. The workers using the unit can, by using dial settings marked on the pulley, and locking it in position with set screws, any desired amplitude (or wobble) can be obtained. This is said to assure maximum efficiency of vibration regardless of the mix.

The wooden screed beam has 3-inch-wide steel flanges on either side of the beam; these form the screeding surface. The front flange tends to cut through and shear off concrete piled in front of it, thereby maintaining a true uniform grade. The flanges can be raised up or down at points along the length by use of bolts to correct for beam deflection and provide a crown.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the card at page 18. Circle No. 19.

#### Hole-saver tools for rock drillers

For rock drillers faced with the problem of reclaiming lost bits, couplings, and broken steel, to save the hole, Brunner & Lay has hole-saver tools available in all popular connections including the new HL-14, HL-16, and HL-17 threads, for pulling out related sizes of bits and other parts.

For further information write to Brunner & Lay, Inc., Dept. C&E, 9300 W. King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 38.



## SNOW MUST GO!

—when you use  
Snow Plow and Wing  
Attachments on your  
GALION Graders

Galion "V" type Snow Plows are sturdily constructed and braced for heavy-duty service. Renewable cutting edge of high carbon steel. Sliding shoes, with renewable wearing plates, prevent plow from digging into the road surface. Plow is independently operated by the hydraulic system of the grader and is controlled from the cab.

Plows slice through deep snow with a minimum of resistance. The heavy weight and powerful tandem drive of Galion Graders combined with Galion Snow Plows enable you to clear maximum mileage of roads per hour of operation. Made in sizes to fit every model grader in the Galion line.

The Galion Snow Wing facilitates removal of snow from road shoulders, and is a great help in cutting down high drifts. The hydraulic pump (driven by grader engine) is used to insure quick and accurate adjustment of Wing and "V" Plow independent of grader operation. The Galion Wing has a four-foot lift adjustment from ground level and an angle adjustment of approximately 45° providing an 8 ft. cutting height. When not in use, Wing folds back close to grader.



Write for literature.

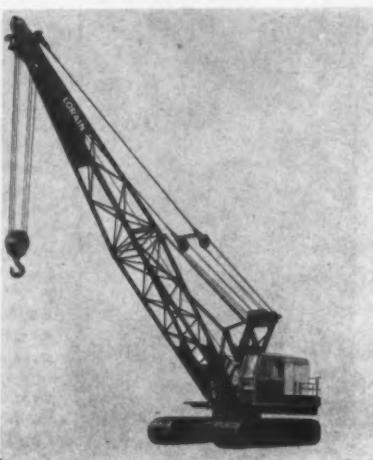
THE GALION IRON WORKS & MFG. COMPANY  
General and Export Offices—GALION, OHIO, U.S.A.  
Cable Address—GALIONIRON, Galion, Ohio

## MOTOR GRADERS & ROLLERS VIBRATORY COMPACTORS • PNEUMATIC TIRE ROLLERS

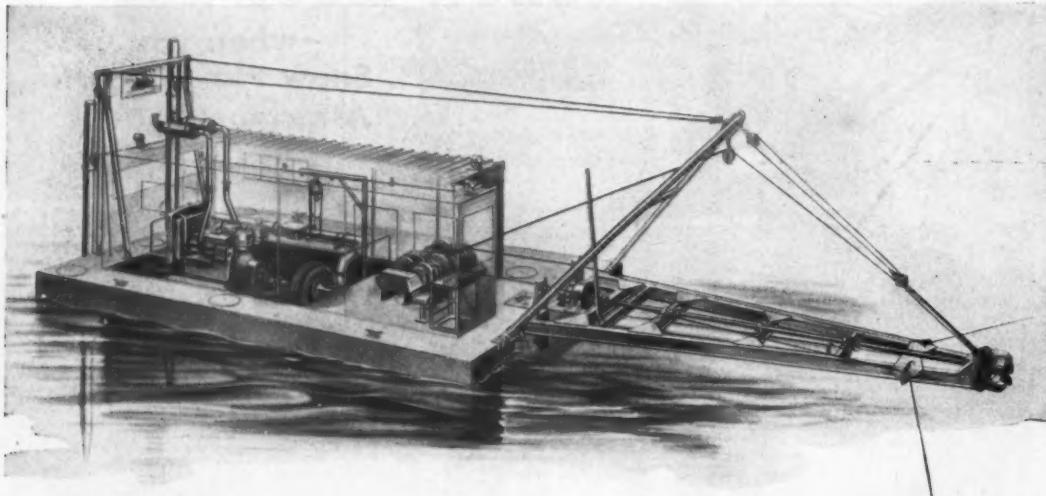


For more facts, use Request Card at page 18 and circle No. 355

Largest crawler-mounted crane in the Lorain line is this new 80-ton rig, the Model 880. A simple method of removing crawler side frames is a feature.



### The Most Advanced Dredges In Their Class



## Ellicott "Dragon"® Model Portable Dredges

Here's why:

1. These are dredges in which portability is a reality not a possibility. Patented 2-piece hull disassembles quickly and can be reassembled on shore or in the water. Exclusive Ellicott design places all connectors above the water, insuring against leaks.
2. All components are designed and built by Ellicott whose centralized engineering and manufacturing responsibility insures quality control.
3. "DRAGONS" are completely electro-hydraulically operated with unified controls to facilitate handling ease, lessen operator fatigue and raise outputs. This kind of control was first introduced by Ellicott on portable dredges over 10 years ago.
4. Because severe damage can often occur when equipment is submerged from view, Ellicott locates all primary machinery above the water,

eliminating the downtime of costly accidents from cave-ins or debris entanglement.

5. "DRAGONS" are products of experience gained by a company which has concentrated on designing and building dredges of all types and sizes for 75 years. This know-how unequalled by any other dredge builder.

These and other exclusive Ellicott designed features spell out why today's rugged durable "DRAGONS" are recognized everywhere to be top performers as proved by their work on road construction, land reclamation, industrial pond clearance and waterway maintenance. To find out more about them, their accomplishments and how one is suitable for your construction operations, write for Bulletin 980.

Please fill in the handy coupon.

### ELLIOTT DREDGES

ELLIOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragages Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico. Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.



Marking Our 75th Year

For more facts, use coupon or Request Card at page 18 and circle No. 356

ELLIOTT MACHINE CORPORATION  
1600 Block of Bush Street • Baltimore 30, Maryland

Send me a copy of Bulletin 980, describing "DRAGONS," "The Ultimate in Portable Dredge Engineering."

Name \_\_\_\_\_

Firm \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_ 2754

### Simplified transport is feature of new crane

The Theew Shovel Co. has announced an addition to its Lorain line of shovels and cranes with the introduction of an 80-ton crawler crane, the Model 880. The new rig is the largest crawler-mounted excavator ever offered by the company.

A special feature of the new rig is that the crawler side frames may be removed by the simple method of screwing retractable telescopic axles into the crawler body. Tread belts and drive chains are left intact on their frames. Field disassembly time is saved. This simple removal of side

frames reduces over-all widths of the machine for shipping on flatcar or truck.

Additional features include 2-lever "joy-stick" controls for all major turntable operations; two independent travel speeds in both directions; turntable connection with 10-year warranty; and air-power controls for crawler travel.

For further information write to The Theew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18, Circle No. 5.

### Concrete-vibrator device prevents motor burnout

The Thor Power Tool Co. offers an electric motor-in-head vibrator that is said to virtually eliminate motor burnout.

Known as Model CV3, the unit is designed for use on 115-volt ac. In the event of overheating of the CV3 in open temperature rise or current overload, a special thermal shutdown control stops the motor, then automatically restarts it when the motor has cooled sufficiently for safe operation.

The CV3 vibrators have a submersible push-button switch, deliver 15,000 rpm, and are available with 10 or 20-foot-long flexible, 4-ply neoprene hose. Attached to the end of the hose is 25 feet of 3-conductor heavy-duty rubber-covered cable with a 3-prong, grounding-type male plug. The vibrating head weighs 15½ pounds.

For further information write to the Thor Power Tool Co., Dept. C&E, 175 N. State St., Aurora, Ill., or use the card at page 18, Circle No. 55.

### New Winch-Hoist Works Off Battery or 110-Volt Circuit



\$237.50  
BATTERY MODEL  
\$280.00  
110-VOLT MODEL

The new MY-TE all-purpose winch and hoist will outpull and outlift any other unit in its price class. Saves time, work, money! Mounts on car, truck, boat, etc., with just 6 bolts. It's portable; can be shifted from one job to another by one man. Drum capacity: 150 ft. of 3/4" cable. Remote cable has forward-reverse control.

**BATTERY MODEL** Works off any 6- or 12-volt battery. Lifts 2500 lbs.; pulls 5000 lbs.; weighs just 60 lbs. \$237.50, fob, Indianapolis.

**110-VOLT MODEL** Works off 110-volt circuit, single phase, 60-cycle ac current. Lifts 1500 lbs. Weighs just 57 lbs. \$280.00, fob, Indianapolis.

FREE Bulletin . . . Dealer Inquiries Invited  
**CITY ENGINEERING CO., INC.**  
3547 Massachusetts Ave. • Indianapolis 18, Ind.

For more facts, circle No. 357  
CONTRACTORS AND ENGINEERS

The 45-ton-capacity Earthking travels over off-highway roads at speeds up to 52 mph, and can dump "on the move" in less than 12 seconds.

### Earthmoving unit for large projects

The Earthking, manufactured by Challenge-Cook Bros. Inc., is a complete hauling unit designed and engineered for large earthmoving projects.

According to the manufacturer, it hauls as much as 45-ton payloads over off-highway construction roads at speeds up to 52 mph. Air-actuated bottom-dump gates are operated

from inside the cab.

The Earthking can also be used to haul full legal payloads over the highway.

For further information write to Challenge-Cook Bros. Inc., Dept. 13, Dept. C&E, 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card that is bound in at page 18. Circle No. 68.



### Extra-heavy-duty saw slices stone, metal

A newly improved extra-heavy-duty builders' saw is offered by the Porter-Cable Machine Co.

Called Model 528A, the unit is said to handle any type of cutting requirements and features wider blade guards to accept heavy-duty abrasive blades for slicing through stone or metal. Motor windings are double insulated, and a more rugged telescoping guard reportedly prevents jamming, even on compound miters, thus eliminating drag through the cut.

In addition, the 528A features a calibrated depth gage and bevel adjustment, as well as a sawdust ejector to keep the line of cut clear. The 16-pound saw is perfectly balanced for easy operation, and may be used with a saw table for stationary operations.

For further information write to the Porter-Cable Machine Co., Dept. C&E, 700 Marcellus St., Syracuse 1, N. Y., or use the Request Card at page 18. Circle No. 133.

**YARDAGE BOOSTER!** ATECO ripper on this Euclid TC-12 fractures shale for fast, easy scraper loading. Same machine and operator push-loads scrapers and handles bulldozing on the job.



*3 Reasons why it pays to use  
RIPPERS...*



**BIGGER PAYLOADS** with less boosting, less scraper wear and tear are the profitable results of ripping between scraper passes on this cut and fill job. International TD25 with dozer and ATECO ripper is ready to rip, doze or push-load as needed.



**LOW COST PAVEMENT BUSTING!** ATECO rippers on two Caterpillar 977 loaders make quick work of this repave job. ATECO rippers will break up any kind of unreinforced pavement into easy bucket loading material.

**1. Step up production 20% or more!** You'll be hours and dollars ahead to rip almost any material first—whether you're loading by scraper, loader or dragline. Just a few passes with an ATECO ripper fractures and loosens anything but solid granite or bar-reinforced concrete into easy-loading condition. You don't need another machine or operator—just put an ATECO ripper on the rear of your dozer tractor or loader. One machine, one operator, is ready to rip, load or bulldoze to give you 20% to 30% higher production at far lower costs per yard!

**2. Save wear and tear on loading equipment...** Loading ripped material is far easier on your scraper, loader or dozer. You'll get months, even years, of extra service life and save costly downtime and repairs.

**3. Eliminate costly shooting and pavement breaking...** Rugged ATECO rippers will penetrate, rip and fracture rock, shale, cemented gravel, caliche, hardpan, sandstone, asphalt, non-reinforced concrete—and do it at a fraction of the cost of shooting, drop-ball or pavement breaker operation.

ATECO pioneered the tractor-mounted rock ripper, and builds the most complete ripper line on the market today—for all makes of crawler tractors and crawler-type front-end loaders. ATECO rippers have a world-wide record of superior performance, proved on thousands of jobs. Why settle for less? Write or wire for the facts about ATECO rippers now—please address Dept. 20.

### FOUNDATION CONSTRUCTION

### CAISONS

#### DRILLED AND UNDERREAMED

### PIERS

#### SPECIAL DRILLING PROBLEMS

Offices in Atlanta, Ga.,  
Pittsburgh, Pa.,  
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Wire or phone for a quotation  
on your next foundation job—  
ANYWHERE IN THE WORLD

**McKINNEY**  
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American TRACTOR EQUIPMENT  
Corporation Designers and Manufacturers  
Since 1920

9131 San Leandro Blvd., Oakland 3, Calif. • 6541 West 65th Street, Chicago 38, Illinois

For more facts, use Request Card at page 18 and circle No. 359

## Management



by GEORGE E. DEATHERAGE, P. E.  
construction consultant

## Highways: Municipal construction contracts— general conditions

Since road construction done for municipalities differs slightly from work on roads for a state highway department, it is natural that there will be differences in the contracts themselves. The forms generally in use by towns and cities (AGC Standard form-10 and APWA Form-A) contain general conditions of the contract that cover many areas.

In these forms, the word "Engineer" refers to the engineer of the owner, acting personally or through any assistants he has authorized in writing. The term "subcontractor" covers only those having a direct contract with the contractor or those furnishing material worked to a special design according to the specifications of the work. It does not include those who merely furnish material not so worked.

The agreement is signed in duplicate by the owner and the contractor. What is called for by one contract document is as binding as if called for by all. In case of conflict between plans and specifications, the specifications govern.

The owner is responsible for the adequacy of the plans and specifications. The engineer, as the owner's representative, or the owner, acting through the engineer, furnishes plans and specifications that completely represent the requirements of the work as far as practical. All drawing and instructions must be consistent with the contract documents and be true developments from them. In the cases of lump-sum contracts, plans and specifications that completely represent the work to be done should be furnished prior to the time of entering into the contract.

### Terms and obligations

No verbal agreement or conversation with any agent or employee of the owner before or after the contract's execution affects or modifies any of the terms or obligations contained in the contract documents.

Unless otherwise provided in the contract documents, the engineer furnishes free to the contractor all copies of drawings and specifications reasonably necessary for the execution of the work. These must not be re-used on other work, and, with the exception of the signed contract, they are returned to the engineer on his request, at the completion of the work. All models are the property of the owner.

If the subsoil conditions are found to differ materially from those indicated by logs of test borings or records made by other methods of underground exploration, adjustment in cost is made as provided in the general conditions for changes contained in the contract.

Unless otherwise stipulated, the contractor provides and pays for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for the completion of the work. Unless otherwise specified, all materials incorporated in the permanent work should be new, and both workmanship and materials should be of good quality. The contractor must, if required, furnish satisfactory evidence as to the kind and quality of materials. He

## LOW COST...EASY OPERATION

### Rivinius

#### LIVE POWER STEERING

#### for CAT D8 Tractors

(prior to 14A models)

**SAVES MAN-POWER:** Operator fatigue goes down... performance goes up! Finger tip control Live Power Steering provides closer, faster control of D8 power and maneuverability.

**SAVES CLUTCHES:** No wasteful slippage and clutch wear... on each turn the clutches are engaged smoothly into complete seizure.

**SAVES TIME:** Levers move only  $1\frac{1}{2}$ " and return automatically when released. Operators report they can operate a D8 one, sometimes two speeds faster with Rivinius Live Power Steering.

**SAVES DOLLARS:** This new Rivinius system is compact, easy to install on D8's in the field... consists of hydraulic cylinder, valve, pump, reservoir, brackets and hardware.

See your Caterpillar dealer now...or write:  
**Rivinius, Inc.**  
EUREKA, ILLINOIS

For Caterpillar Motor Graders: Torque Steering Booster...Hydraulic Moldboard Shift...Snow Blower...Snow Loader  
For Caterpillar D8 Tractors: Live Power Steering



For more facts, use Request Card at page 18 and circle No. 360

## HY-LO *Now! A COMPLETE LINE OF* inexpensive portable heaters!

### FORCED-AIR Heater New... Revolutionary!



#### 1/4 THE COST!

Produces 70,000 to 125,000 BTUs per hr.  
Over 600 cu. ft. of CLEAN HEAT per min.

Only  $\frac{1}{4}$  the cost of conventional forced-air heaters, yet equal in performance.

AVAILABLE IN ALL

WRITE FOR FREE LITERATURE

### LP GAS Heater

Produces more radiant heat!  
85,000 BTU output

The HOTTEST LP Heater on the market.

### SALAMANDER

Low cost heat!  
The most popular Salamander on the market.

OUTSELLS ALL OTHERS!

LPs available with Automatic or Manual Controls.  
(Manual model shown here.)

PRINCIPAL CITIES

NAME OF NEAREST DEALER

PRODUCTS CO. — Heaters since 1911  
297 STOWELL STREET, UPLAND, CALIF.

For more facts, use Request Card at page 18 and circle No. 361



This is the fifty-ninth of a series of articles on Construction Management by George E. Deatherage, P.E., The National Schools of Construction, Satsuma, Fla. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by George E. Deatherage & Son, Construction Consultants, Satsuma, Fla.

must provide adequate sanitary facilities.

The contractor pays all royalties and license fees and defends all suits or claims for infringement of patent right. The owner is safe from loss on this account except when he has specified a particular manufacturer, product, or process.

Unless otherwise specified, the owner furnishes all land surveys, base lines, and stakes for locating the principal parts of the work, together with a suitable number of bench marks. From the information provided by the owner, the contractor makes all detail surveys, lines and elevations as he deems necessary.

The contractor secures and pays for permits and licenses of a temporary nature necessary for the work. Permits, licenses, and easements for permanent structures or permanent changes in existing facilities are secured and paid for by the owner, unless otherwise specified.

The contractor must carefully preserve bench marks, reference points, and stakes, and, in case of willful or careless destruction, he is charged with the resulting expense and is responsible for any mistakes that may be caused.

The contractor must provide all necessary watchmen, barricades, red lights and warning signs and must take all necessary precautions for the protection of the public. He must protect the work and the owner's property from damage and must make good any damage resulting from lack of reasonable precautions, except that which is due to errors in the contract documents or is caused by employees of the owner.

In an emergency affecting the safety of life or property, the contractor may, without special authorization from the engineer, act at his discretion to prevent threatening loss or injury. Any compensation claimed by the contractor on account of emergency work is determined by agreement or by arbitration.

#### Supervision of the work

The owner should provide sufficient competent engineering personnel to supervise the work. The engineer and his representatives have access to the work at all times, and the contractor should provide facilities for this access and inspection.

If any work is required to be specially tested or approved, the contractor gives the engineer notice of its readiness for inspection, and, if the inspection is by an authority other than the engineer, of the date fixed for the inspection.

If any work is covered up without the approval of the engineer, it must, if he requires, be uncovered for examination and properly restored at the contractor's expense. Reinspection of any work may be ordered by the

engineer, and, if so, the work must be uncovered by the contractor. If it is found to be in accordance with the contract documents, the owner pays the cost of reinspection and replacement. If it is not in accordance, the contractor pays the cost.

The contractor should keep on the work a competent superintendent and any necessary assistants, all satisfactory to the engineer. The superintendent represents the contractor in his absence, and all directions given to him are as binding as if given to the contractor. Important directions are immediately confirmed in writing to the contractor.

If the contractor, in the course of the work, finds any discrepancy between the plans and the physical conditions of the locality, or any errors or omissions in the plans or the layout, he should immediately inform the engineer in writing and the engineer should promptly verify it. Any work done after such discovery, until authorized, is done at the contractor's risk.

The owner, without invalidating the contract, may order additions to or deductions from the work, the contract sum being adjusted accordingly. Any claim for extension of time caused by this procedure is adjusted at the time the change is ordered.

In giving instructions, the engineer has authority to make minor changes that do not involve extra cost and are consistent with the purpose of the work. The engineer also has authority to issue written change orders up to and including \$1,000 cost. Except in an emergency endangering life and property, no extra work or change should be made unless done on such a written order, and no claim for an addition to the contract sum is valid unless the additional work was so ordered.

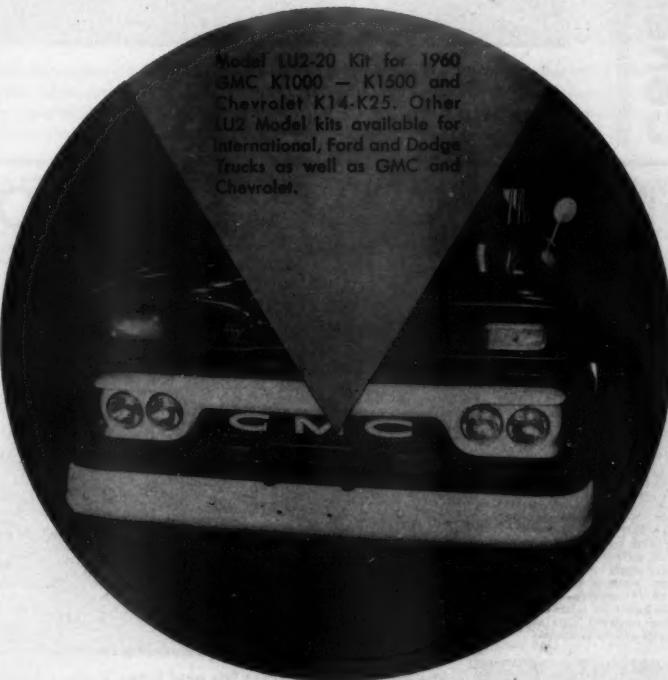
If the owner or his agent reserves the sole right to select equipment to be installed, the contractor is responsible only for its installation according to the plans and specifications and is not liable for its operating performance.

(Continued on next page)

## A BRADEN Winch with

# Versatility Plus!

Model LU2-20 Kit for 1960 GMC, K1000 - K1500 and Chevrolet K14-K25. Other LU2 Model kits available for International, Ford and Dodge Trucks as well as GMC and Chevrolet.



This lightweight, front end model is the sturdiest winch of its type ever developed. Top quality workmanship and finest materials, the same as found in heavier models, make the LU2 series a "workhorse" that will give years of dependable service.

This model is perfect for lifting, towing and pulling jobs that need careful handling. It has a safe working load of 8,000 pounds, and is designed for easy installation.

Write for complete information.

**BRADEN WINCH** DIVISION OF MOTOR PRODUCTS CORPORATION  
P. O. BOX 547 • BROKEN ARROW, OKLAHOMA

"In Service Around the World"  
For more facts, use Request Card at page 18 and circle No. 362

# MICO

## HYDRAULIC PARKING LEVER LOCK

Simply raise the lever, step on the pedal and the biggest truck, the heaviest load is SAFE!



WILL NOT INTERFERE WITH A NORMAL BRAKING OPERATION SIMPLE TO INSTALL

Write for information on all MICO Brake Products

**MINNESOTA AUTOMOTIVE, INC.**  
1101 NORTH FRONT ST. MANKATO, MINNESOTA



For more facts, use Request Card at page 18 and circle No. 363



Interstate construction in Iowa is going ahead at a fast clip. This bridge, one of twin structures carrying Interstate 80 across the Skunk River in Jasper County, near Des Moines, will be opened this fall. Koehring cranes on both sides of the bridge bucket concrete to forms.



Grading work is done by a Cat tractor beneath the nearly completed steel frame for two new buildings for the Remington Rand Univac Division of Sperry Rand near Norristown, Pa. Bethlehem Steel handled erection of the 578 tons of structural steel and 526 tons of joists and long spans.

## CHOSEN ABOVE ALL OTHERS...

HIGHER  
PRODUCTION

GREATER  
ECONOMY

GREATER  
VERSATILITY

Walt Kester (below), owner of The Walt Kester Company of Wichita, Kansas, states: "After looking and studying all portable concrete batching plants on today's market, we found that the Ross six (6) complete Ross plants to handle the concrete batching on twelve (12) missile sites at Salina, Kansas."



The Schilling Atlas Rocket Site near Salina, Kansas, where six complete Ross plants were chosen to handle the concrete batching. Pictured above is a Ross 30-3 Portable Batching Plant and a Ross 350-B Portable Cement Silo. Ross, the leader . . . does the difficult with ease and economy.



### ROSS . . . the leader in Portable Batching Equipment

#### ROSS PORTA-PLANT

BOX 446

PHONE MI 3-4356

BROWNWOOD, TEXAS

For more facts, use Request Card at page 18 and circle No. 364

### Harbormaster Marine Tractors



Harbormaster Marine Tractors are heavy duty outboard propulsion and steering units. They are a complete package, quickly and easily installed for immediate use on new or existing craft. Efficient and economical to operate and maintain, they give you many advantages over inboard marine power. Whether you operate in shallow or deep water, along the coast, in harbors, lakes, canals or rivers . . . Harbormaster is ideal.

The advantages of Harbormasters . . . shorter trip times and exceptional maneuverability and versatility . . . have been proved in hundreds of installations. Models range from 40 to 500 hp, gas or Diesel. Available with direct or remote controls.

**MURRAY & TREGURTHA, INC.**  
44 Hancock Street • Quincy 71, Massachusetts

For more facts, circle No. 365



Send for catalog and get complete details.

ELIMINATE WINTER WORRIES! Built-in cold starting for sub-zero temperatures; totally enclosed working parts. No "frozen-over". Positive take-off, full rpm, flywheel and/or half speed gear end. Write for data and prices.

### LISTER DIESEL ENGINES

Air-Cooled: 1 1/2-72 HP  
Water-Cooled to 90 HP

LISTER-BLACKSTONE, Inc.  
42-32 21st Street, Long Island City 1, N. Y.  
Tel.: STILLWELL 6-2202  
Canadian Lister-Blackstone, Ltd.,  
1931 Eglington Ave. E., Toronto 13, Ont.

For more facts, circle No. 366

### management

(Continued from preceding page)

#### Time for completion

The period of time for completion set forth in the agreement is extended in an amount equal to time lost due to causes that could not have been foreseen or that are beyond the control of the contractor, and that are not the result of his negligence or deliberate act. Extension of time is also allowed for delays caused by any act or omission on the part of the owner or his employees, or other contractors employed by the owner; or for delays due to an act of the government, or the engineer's slowness in furnishing plans and necessary information; or for any other cause that, in the opinion of the engineer, entitles the contractor to an extension of time. Strikes and labor disputes are also causes for time extensions.

If the contractor claims that any instructions issued after the date of the contract involve extra cost, he gives the engineer written notice within a number of days allowed for this in the contract before he proceeds to execute the work. No such claim is valid unless so made.

Extra work authorized after the date of the contract that cannot be classified as coming under any of the contract units may be done at mutually agreed-upon unit prices, or on a lump-sum basis, or as force account work.

If the engineer considers it inexpedient to correct work that has been damaged or that was not done in accordance with the contract, an equitable deduction from the contract price is made.

The contractor should promptly remove from the premises all materials condemned by the engineer as failing to meet contract requirements, whether incorporated in the work or not. The contractor must promptly replace and re-execute his own work in accordance with the contract and without expense to the owner, and must bear the expense of making good any work of other contractors destroyed or damaged by this removal or replacement.

If the contractor does not remove

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Reaching out more than 170 feet with a 200-foot boom to place concrete for aeration tanks at Chicago's North Side Treatment Works is a simple job for this P&H Model 1015 crawler. The rig, with a lifting capacity of 110 tons, can handle booms that are up to 300 feet long.

condemned work and materials promptly, after written notice, the owner may remove them and store the material at the expense of the contractor.

The owner may suspend the work at any time by giving written notice to the contractor. The number of days' notice is stated in the contract. The work is resumed by the contractor within ten days after the date fixed in the written notice from the owner. The owner reimburses the contractor for expense incurred as a result of the suspension.

If the work should be stopped under an order of any court or other public authority for a period of three months, through no fault of the contractor or anyone employed by him; or if the engineer should fail to issue my estimate for payment within thirty days after it is due; or if the owner should fail to pay the contractor any sum certified by the engineer or awarded by arbitrators within a stated number of days after its maturity—then the contractor may, upon seven days' written notice to the owner and the engineer, stop work or terminate the contract and recover from the owner payment for all work executed, plus reasonable profit and damages.

If the contract is terminated before its completion for any cause at all, the contractor, if notified to do so by the owner, must promptly remove any part or all of his equipment or supplies from the owner's property. If he fails to do so, the owner may have them removed at the contractor's expense.

#### Owner's rights

The owner may, at any time during the progress of the work, after written notice to the contractor, take over and place in service any completed portions of the work that are ready for service, although the entire contract is not fully completed. In this case, the owner issues certificates of acceptance for these portions of the work, but taking possession of them is not deemed an acceptance of any other portions of the work. If such prior use increases the cost of or delays the work, the contractor is entitled to this extra compensation.

(Continued on next page)



An average of 15 feet per day is being made by crews boring the Lt. William F. Callahan, Jr., Tunnel under Boston Harbor. A 240-ton cutting shield is being used, and two vertical triplex pumps supplied by Worthington Corp., provide hydraulic pressure for the 28 jacks that push the shield.

## BUILD HIGHWAYS THE ROME WAY



**MIXING AND BLENDING.** Rome Model TRCH 10-36 Hinge Type Offset Disk Plowing Harrow cuts up to 13" deep for low cost mixing, blending, bonding lifts.



**AERATING.** Rome Model TRH 20-30 Hinge Type Offset weighs over 9,000 lbs.—heavy duty construction for less maintenance, longer life.



**PULVERIZING AND LEVELING.** Rome Model TCW 40-24 Wheel Type Offset cuts 15' wide—has rubber tire transport for easy turns, transport, accurate depth control.

For more facts, use Request Card at page 18 and circle No. 367

**ROME.**

**ROME PLOW COMPANY**  
Cedartown, Georgia



### FOR FAST, SAFE, CONCRETE FORMING

#### Pick SURE-GRIP ACCESSORIES

From one source . . . every accessory you need for accurate, safe and dependable concrete forming. They're made to save time . . . reduce your forming costs.

Dayton Sure-Grip accessories are preferred by leading contractors and engineers. National network of distributors assures prompt service — anywhere!



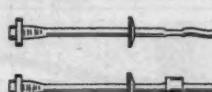
CHANNEL HANGERS



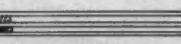
COIL HANGERS



STANDARD OR SLIP-FIT HANGER FRAMES



3000 LB. AND 5000 LB. SNAP TIES



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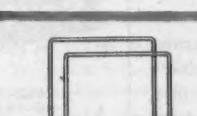
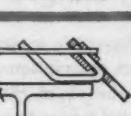
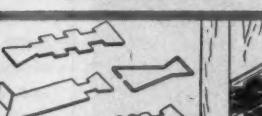


PLATE SADDLE HANGERS



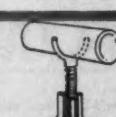
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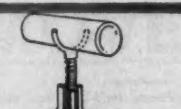
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About 1,600 yards of concrete is placed weekly for Miami Beach's Morton Towers on the site of the famed Flamingo Hotel. Beaver hoisting towers and Crete-Quip automatic concrete equipment speed the work and cut material-handling and labor costs on the two 14-story Y-shaped structures.



Extra-large low-pressure tires, which were especially designed for motor operation in sandy soil, are used by this Galion Model T-700 Grade-D-100 work on a U.S. 23 project being done in Livingston County, Mich. L. W. Edel, Grand Rapids, Mich., is the owner of the rig.

## SAVE TIME—MONEY ON THE JOB WITH POWERFUL TWO-WAY RADIO



Citizens Band Radios by Pearce-Simpson, Inc. Anyone can operate. No license examination. Talk from office to trucks, car to car, perfect for field operations. Currently used by many contractors and engineers for instant communications. Range one to 30 miles. Set is compact, easily movable. Single and multi channel sets available. 5 watts input.

CBD-1: Single channel complete with microphone, crystal, universal mounting bracket, both power supply cables \$159.50  
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CE-10

## management

(Continued from preceding page)  
or extension of time, or both, as determined by the engineer.

The owner may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any certificate of payment to such extent as may be necessary to protect himself from loss on account of (a) defective work not remedied, (b) claims filed or reasonable evidence indicating public filing of claims by other parties against the contractor, (c) failure of the contractor to make payments properly to subcontractors or for material or labor, or (d) damage to another contractor. When these grounds are removed, or the contractor provides a surety bond satisfactory to the owner that will protect the owner in the amount withheld, then payment is made.

The contractor and his sureties indemnify the owner and all his agents and employees from suits, actions, or claims of any character, brought on account of any negligent act or fault of the contractor, his agent, or employees in the execution of the contract. The contractor is required to pay any judgment, with costs, which may be obtained against the owner growing out of such injury or damage.

### Injury or damage

If either party to the contract suffers injury or damage because of any wrongful act or neglect of the other party or of anyone employed by him, then he should be reimbursed by the other party for such damage. Notice of pending claim for reimbursement should be made in writing to the party liable within a reasonable time of the first observation of the damage, and the claim should be filed and adjusted before the time of final contract payment.

Neither the final payment nor any part of the retained percentage becomes due until the contractor delivers to the owner a complete release of all claims or liens arising out of the contract, or receipts in full in place of them, and, if required in either case, an affidavit that so far as he has knowledge the release and receipts include all the labor and

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OCTOBER



As many as 40 re-uses are being delivered by Symons Wood-Ply forms for concrete placement operations on the United Air Lines \$4,645,000 base at Chicago's O'Hare Field. The job, scheduled for completion in January, is being handled by Wm. E. Schmitz & Co., Evanston, Ill.

materials for which a lien or claim could be filed. The contractor may, if any subcontractor refuses to furnish a release of receipt in full, furnish a bond satisfactory to the engineer, to indemnify the owner against any claim or lien (in cases where such payment is not already guaranteed by surety bond). If any claim or lien remains unsatisfied after all payments are made, the contractor must refund to the owner all money that the latter may be compelled to pay in discharging it, including all costs and a reasonable attorney's fee.

The contractor cannot assign the contract or sublet it as a whole or in part without the written consent of the owner, nor can he assign any money due him under the contract without the written consent of the owner. Assigning or subletting the contract does not relieve the contractor or his surety of any contract obligations.

Whenever work being done by the owner or other contractors is contiguous to work in the contract, the rights of the various interests involved are established by the engineer.

#### Arbitration

All decisions of the engineer are final except in cases where time or financial considerations are involved; these, if no agreement is reached, are subject to arbitration. Any dispute, or any decision of the engineer which is subject to arbitration, is submitted to arbitration upon the demand of either party involved.

The contractor should not cause a delay of the work because arbitration proceedings are pending, except with the written permission of the engineer, and then only until the arbitrators have an opportunity to determine whether or not the work should continue until they decide the matter.

The demand for arbitration is delivered in writing to the engineer and the adverse party within ten days of the receipt of the engineer's decision, and in no case after final payment has been accepted, except if otherwise expressly stipulated in the contract documents. If the engineer

(Continued on next page)



Borrow-pit material is loaded out to a Ford truck by a Hough Payloader for use as fill for the Northwest Orient Air Lines main base at Wold-Chamberlain Field, Hennepin County, Minn. This H-90 fills a 10-yard truck in four passes. About 400,000 yards of fill is going into the project.



The ML-157 (shown above) has a 7000-lb. carrying capacity. Lorain also builds the ML-153 with 6000-lb. carrying capacity.

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- \*WEIGHT BALANCE.** Lorain puts the center of gravity low, distributes the weight on heavy-duty axles for ground hugging travel without bounce or teeter. The product of true engineered balance, the ML-157 travels with its load at optimum height to save dump time at the truck.
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THE THEW SHOVEL COMPANY, LORAIN, OHIO

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One-foot travel control boosts payloads . . . frees operator's hands for steering, bucket control and other operations. By pivoting his foot between two adjacent pedals, operator controls direction—forward and reverse. Speed is controlled by depressing pedal further.

## management

(Continued from preceding page)

fails to make a decision within a reasonable time, a demand for arbitration may be made as if his decision had been rendered against the demanding party.

No one must be nominated as an arbitrator who is in any way financially interested in the contract or the business affairs of the owner, the contractor, or the engineer, or is otherwise connected with any of them. Each arbitrator should be a person familiar with the work in general or the problem involved in the dispute.

Unless otherwise provided by con-

trolling statutes, the parties may agree upon one arbitrator; otherwise, there are three—one named in writing by each party to the contract and the third chosen by these two arbitrators. If they should fail to select a third within fifteen days, then he may be appointed by the presiding officer (if a disinterested party) of the Bar Association nearest to the location of the work.

If the party demanding arbitration fails to name an arbitrator within ten days of his demand, his right to arbitration lapses. If the other party fails to name an arbitrator within ten days, the presiding officer may do so. If the latter fails to do this, an arbitrator may be appointed on the petition of the party demanding arbitration by a judge of the Federal Court in the district where the arbitration is to be held.

If there is one arbitrator, his decision is binding. If there are three, the decision of any two is binding in respect to both the matter submitted and to the procedure to be followed.

### General procedure

The arbitrators usually deliver a written notice to each of the parties and to the engineer of the time and place of the hearing. Each party may submit to the arbitrators such evidence and argument as he may desire and the arbitrators may consider pertinent. The arbitrators, however, are not bound by technical rules of law or procedure. They may hear evidence in whatever form they desire.

The parties may be represented by anyone they select. Each party and the engineer supply the arbitrators with such papers and information as they may demand, or with any witness subject to their control. If a party refuses to comply with such demands, the arbitrators may render their decision without the evidence that might have been obtained.

The submission to arbitration—the statement of the matters in dispute—is in writing and acknowledged before a notary. Unless it is waived in writing by both parties to the arbitration, the arbitrators, before hearing testimony, are sworn by an officer authorized by law to administer an oath, to faithfully and fairly hear and examine the matters in controversy and to make a just award according to the best of their understanding.

The arbitrators, if they deem the cause demands it, are authorized to award to the party whose contention is sustained the sum they consider proper for the time, expense, and trouble the arbitration has caused him. If the arbitration was demanded without reasonable cause, damages may be allowed for delay and other losses. The arbitrators fix their own compensation, unless otherwise provided by agreement, and assess the costs and charges of the arbitration upon either or both parties.

The award of the arbitrators should be in writing and acknowledged like a deed to be recorded. A duplicate is delivered to each of the parties to the controversy and to the engineer. Judgment may be rendered on the award by the Federal Court or the highest State Court having jurisdiction to render it.

The engineer is not a party to the dispute. He is given the right to appear before the arbitrators to explain the basis of his decision and to give such evidence that the arbitrators may require.

(Next month's article will deal with "Contractors' license laws.")

### Seattle manager for Joy

Clair C. Ballard has been named Seattle district manager of both the Industrial and the Mining and Construction divisions for Joy Mfg. Co., Pittsburgh.

## News from Mobilift

John A. Brenneis and Ned J. Walsh have been named regional sales managers for fork-lift trucks and towing tractors made by the Mobilift Division of Minneapolis-Moline Co., Hopkins, Minn.

Brenneis will have his headquarters in New York City, and Walsh will be located in Fort Wayne, Ind.

Jack B. Trussel, sales manager of the division, has been appointed to the Joint Management Groups and Professional Societies Committee of the Material Handling Institute. The committee is charged with developing material-handling surveys, furnishing industry speakers, and promoting cooperation between the institute and professional societies.



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# Product LITERATURE

Rock salt—a booklet discussing the benefits of Morton rock salt in treating icy pavements. Illustrated with chart, graph, drawings. Write to the Morton Salt Co., Dept. C&E, 110 N. Wacker Drive, Chicago 6, Ill., or use the Request Card at page 18. Circle No. 116.

Gooseneck trailers—well illustrated literature on LaCrosse removable gooseneck trailers in capacities of 25, 35, 50, and 75 tons. Includes specifications of the RG2 and RG3 models. Write to the LaCrosse Trailer Corp., Dept. C&E, 418 Gould St., LaCrosse, Wis., or use the Request Card at page 18. Circle No. 113.

Snowplow coupling—a fact sheet on the Kasten Husting Hitch—a snap coupling that can be used for any make of snowplow. According to the literature, this hitch permits attaching a plow to a truck in a matter of seconds. Write to the Kasten Mfg. Corp., Dept. C&E, Allenton, Wis., or use the Request Card at page 18. Circle No. 112.

Cementing compound—a bulletin on the use of Berylex cementing compound to give cold-weather protection to concrete and mortar. Includes reports of concrete compressive-strength tests. Technical Bulletin No. 102. Write to Berylex National Sales, Division of Harry Warde & Co., Inc., Dept. C&E, P. O. Box 33, Kansas City 3, Kans., or use the Request Card at page 18. Circle No. 39.

Tractor shovels—a bulletin describing the two largest-capacity Michigan tractor shovels, Models 275A and 375A. Offers complete specifications for both machines. Write to the Clark Equipment Co., Construction Machinery Division, Dept. C&E, P. O. Box 599, Pipestone Plant, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 137.

Masonry water repellent—a brochure on the new transparent water repellent for exterior masonry surfaces above grade, Hydrocide S-X Hydro. Discusses the advantages of its use in retarding spalling and cracking, preventing interior damage, minimizing efflorescence, etc.

Write to the Building Products Division, Sonneborn Chemical & Refining Corp., Dept. S, Dept. C&E, 404 Park Ave. S., New York 16, N. Y., or use the Request Card at page 18. Circle No. 138.

Versatile mixer—a brochure on the Pulvi-Mixer, a self-propelled rotary in-place mixer. Illustrations show the unit at work in various types of road stabilization.

Write to the American-Marietta Co., Construction Equipment Division, Dept. C&E, 13050 Blue Mound Road, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 139.

Crane—a catalog describing and illustrating the Manitowoc Model 4000 lift crane, which has a capacity of 125 tons at a 17-foot radius. Without extensive advance preparations or dismantling, states the literature, the unit can be put on a standard railroad flatcar for fast moves between jobs. Complete specifications.

Write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card at page 18. Circle No. 62.

For more facts, use coupon or Request Card at page 18 and circle No. 377

Steel forms—a booklet on Dixie steel forms. Covers underwater forms (with case histories), as well as pre-stress and column forms. Photographs and sketches illustrate text.

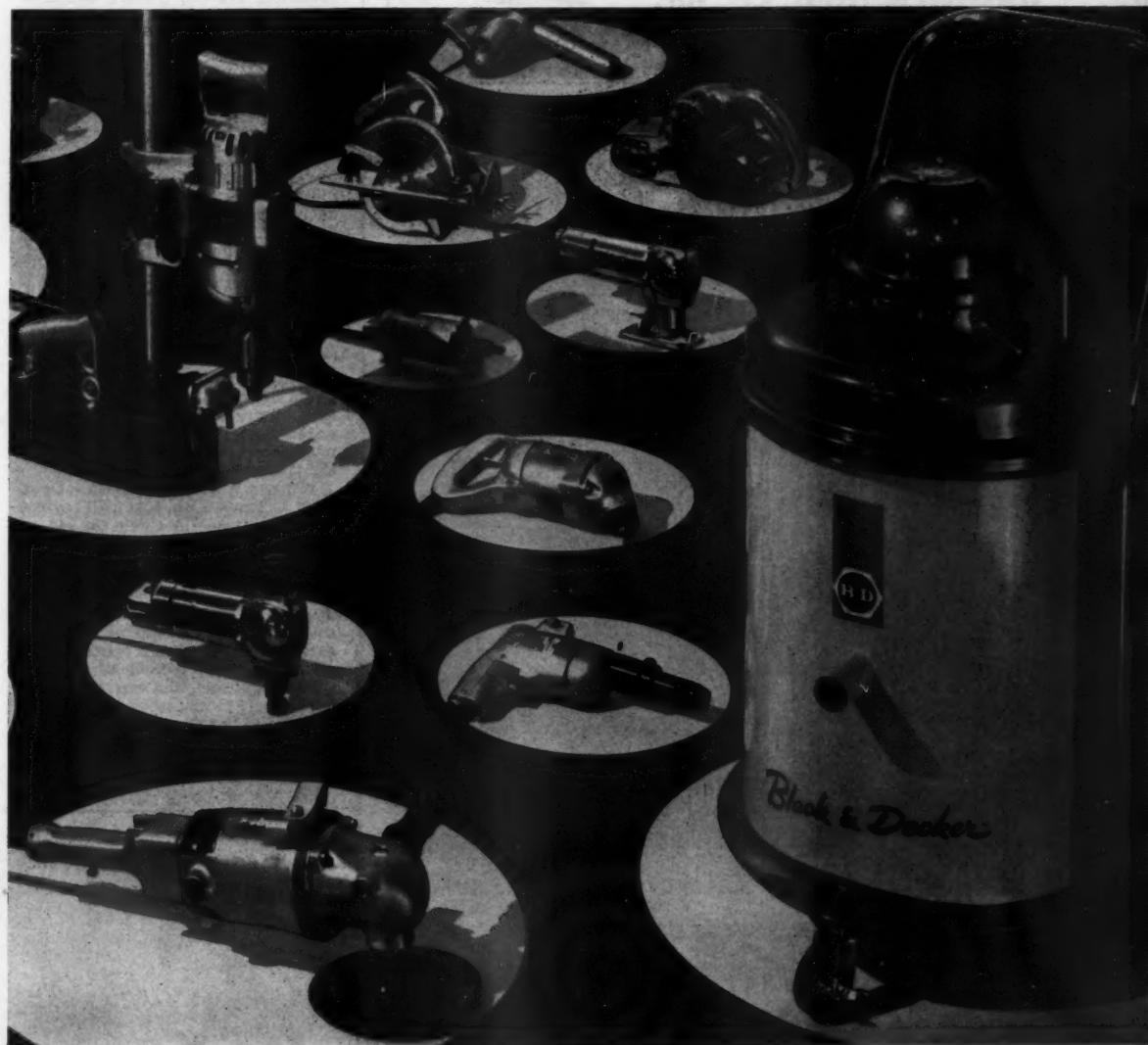
Write to the Dixie Form & Steel Co., Dept. C&E, P. O. Box 1997, San

Antonio, Texas, or use the Request Card at page 18. Circle No. 176.

Financing services—a file-size brochure for company officials concerned with finances. Entitled "Financing Business Action Under

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Today's Conditions," the booklet non-technically describes modern industrial financing practice under the headings: Accounts Receivable Financing; Factoring; Inventory Loans; Equipment Loans; Industrial Sale and Lease Financing; Financing of Merg-



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Today's high construction costs and tight completion schedules demand a sharp pencil. That's why labor-saving, time-saving SONOTUBE Fibre Forms are your best bet whenever round concrete columns are required!

These one-piece forms require no fabrication, no assembly. Their light weight makes handling and placing easier, yet SONOTUBE Fibre Forms require only minimum bracing and maintain perfect shape throughout pouring and curing. Strip quickly, too!

Use SONOTUBE Fibre Forms for full round or partially round columns . . . saw them for tie-in with wall or beam forms, cut them for utility outlets, or punch them for tie-in rods and anchor bolts. Any way you look at it, low-cost Sonoco SONOTUBE Fibre Forms provide you with the fastest, most economical forming method for round columns of concrete.

Choose the SONOTUBE type that meets your job requirements most economically—in sizes 2" to 48" I.D., any length. (Standard lengths—18')

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## Product Literature—Information on new products

ers, Buyouts, and Acquisitions; and Rediscounting. Use company letterhead.

Write to Walter E. Heller & Co., Dept. C&E, 105 W. Adams St., Chicago 90, Ill., or use the Request Card at page 18. Circle No. 101.

**Density testing**—a bulletin giving application and technical data on Soiltest's Volumeasure apparatus for in-place density tests. Also includes complete construction details of the Volumeasure, and an explanation of the assembly procedure. Price list.

Write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 141.

**Equipment trailers**—a folder describing and illustrating Rogers TPG Series Hydra-Lift detachable gooseneck low-bed trailers, available in capacities from 25 to 75 tons. Dimensions and specifications. Form No. TPG-60.

Write to the Rogers Bros. Corp., Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card at page 18. Circle No. 142.

**Salt**—a booklet on the use of salt for road stabilization. Describes and illustrates methods, applications, and advantages of salt stabilization. Case histories included.

Write to the Salt Institute, Dept. C&E, 33 N. LaSalle St., Chicago 2, Ill., or use the Request Card at page 18. Circle No. 143.

**Joint sealants**—a catalog entitled "Sealtight Products For Concrete Construction." Covers expansion joints, joint-sealing compounds, control joints, sewer-joint compounds, waterstops, and curing compounds, plus many new additions to the Seal-tight line. Catalog No. 100.

Write to W. R. Meadows, Inc., Dept. C&E, 7 Kimball St., Elgin, Ill., or use the card at page 18. Circle No. 144.

**Transit mixers**—a bulletin on the new line of Rex concrete carriers designed specifically for the ready-mix industry. Contains information on the flywheel power-takeoff transmission, and gives detailed specifications on the two 6 x 4 models, the Rex Lite-Weight and Rex Custom. Bulletin 6031.

Write to the Chain Belt Co., Dept. C&E, 4701 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 86.

**Crushing, screening plant**—fact sheet on the Diamond 70 portable crushing and screening plant. Gives details on major components and is illustrated with photographs. Specifications included. Catalog D-146.

Write to the Goodman Mfg. Co., Diamond Iron Works Division, Dept. C&E, 4834 S. Halsted St., Chicago 9, Ill., or use the Request Card at page 18. Circle No. 145.

**Air compressors**—a folder describing and illustrating Lindsay portable direct-drive air compressors. Includes brief specifications for models ranging in capacity from 5 to 55 cfm. Also lists the tools that may be operated from these models.

Write to P. K. Lindsay Co., Inc., Dept. C&E, 97 Tilston St., Everett 18, Mass., or use the Request Card at page 18. Circle No. 146.

**Pumps**—a bulletin illustrating and describing four models in the Wonder-Lite line of portable, lightweight pumps. Charts show gpm capacities for all four models.

Write to the Construction Machinery Co., Dept. C&E, 447 Union St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 147.

**Void forms**—a catalog describing the benefits of the Elgood Voidcrete re-usable inflatable void forms for a wide range of prestressed and precast concrete products. Catalog No. 602.

Write to the Elgood Concrete Services Corp., Dept. C&E, 378 Ten Eyck St., Brooklyn, N. Y., or use the Request Card at page 18. Circle No. 111.

**Tower crane**—a folder describing the Pecco slewing tower crane. Points out that the unit travels from site to site without dismantling, and that upon arrival it is quickly and easily made ready for work. Action photos; close-ups of major components.

Write to the American Pecco Corp., Dept. C&E, 188 E. Post Road, White Plains, N. Y., or use the Request Card at page 18. Circle No. 110.

**Mowers**—a folder on the Anderson Model G hydraulic mower for attachment to tractors. Lists such benefits as positive knife speed, instant change of height or angle while mowing, and balanced power system. Drawings, photographs, specifications. Also gives brief data on the Anderson extension mower, as well as on the Model F Contour-Glide for

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power and loader combination.  
Write to A. C. Anderson, Inc., Dept. C&E, Wildwood, N. J., or use the Request Card at page 18. Circle No. 127.

**Headwarmers**—a folder describing and illustrating the full Parker line of headwarmers for hard hats.

Write to the Parker Safety Equipment Co., Dept. C&E, 785 Lyons Ave., Irvington 11, N. J., or use the Request Card at page 18. Circle No. 69.

**Cationic bitumuls**—an illustrated bulletin on cationic bitumuls that, according to the literature, will treat most aggregates, including the so-called "hard-to-coat" types; take a fast, initial set, even when damp aggregates are used or under difficult drying conditions; and permit road builders to start work earlier in the spring. Photographs illustrate all sections of the bulletin. Cationic Bitumuls Bulletin No. A-36.

Write to the American Bitumuls & Asphalt Co., Dept. C&E, 320 Market St., San Francisco 20, Calif., or use the Request Card at page 18. Circle No. 132.

**Crane-excavator**—a catalog covering the recently introduced Thew 40-ton Lorain Moto-Crane Model MC-160. Discusses such features as the Power-Set outriggers that set up in about one minute; lighter, stronger square-tubular-chord boom; removable counterweight; and fast over-the-highway travel. Action photos illustrate text.

For further information write to The Thew Shovel Co., Advertising Dept., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 177.

**Scraper**—literature on M-R-S models 250-HW (Type A), 250-HW (Type B), and 250-HC hydraulic scrapers, offering struck capacities of 40, 45, and 54 cubic yards, respectively. Photographs include close-ups of major components. Specifications. Write to the M-R-S Mfg. Co., Dept. C&E, Flora, Miss., or use the Request Card at page 18. Circle No. 115.

**Steel load tables**—a booklet containing Ceco Steel load tables with properties and dimensions for S, E/C, and L Series open-web steel joists; steel roof deck; and Ceco centering. Charts and diagrams included. Write to Ceco Steel Products Corp., Dept. C&E, 5601 W. 26th St., Chicago 30, Ill., or use the Request Card at page 18. Circle No. 109.

**Treatment of abrasives**—a manual entitled "Calcium Chloride for Abrasive Treatment in Winter Maintenance." Includes data on calcium chloride, recommended procedures for treating, storing, applying and spreading abrasives.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 56.

**LP-gas heaters**—a catalog on Insto-Hot LP-gas heaters. Besides salamanders, infrared heaters, and blower heaters, the literature illustrates a line of heating accessories such as cylinder carts, auxiliary blowers, heating torches.

Write to the Insto-Gas Corp., Dept. C&E, 998 E. Woodbridge, Detroit 7, Mich., or use the Request Card at page 18. Circle No. 44.

**Crushers**—a bulletin covering the complete line of Pennsylvania crushers. Illustrates and briefly describes each type of crusher in the line and indicates typical applications. Bulletin 4020.

Write to the Pennsylvania Crusher Division, Bath Iron Works Corp., Dept. C&E, West Chester, Pa., or use the card at page 18. Circle No. 31.

**Wire-rope slings**—a folder covering American Chain & Cable's Double Green Stripe, very-high-strength Strand-Laid wire-rope slings. Construction details and rated capacities of the slings listed and tabulated in easy-to-read form. Bulletin DH-425.

Write to the American Chain & Cable Co., Inc., Dept. C&E, 929 Connecticut Ave., Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 147.

**Tractors, attachments**—a 24-page catalog-type brochure showing Massey-Ferguson's entire new industrial equipment line. Includes action photographs, cutaway drawings, operating data, and specifications.

Write to the Massey-Ferguson Industrial Division, Dept. C&E, 1009 S. West St., Wichita 13, Kans., or use the Request Card at page 18. Circle No. 40.

**Aggregate dryer**—a brochure describing and illustrating Tarco Flash-Flame aggregate and material dryers. Includes specifications and data on attachments.

Write to the Tarrant Mfg. Co., Dept. C&E, 27 Jumel Place, Saratoga Springs, N. Y., or use the Request Card at page 18. Circle No. 118.

**Motor grader**—a bulletin describing the Allis-Chalmers Model D motor grader available with either gasoline or diesel-engine power. Covers such advantages as strength, traction, handling ease, and simplified service. Furnishes specifications, as well as data on accessories and attachments. Form No. MS-1319.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 131.

**Versatile materials handler**—an illustrated folder on the Pettibone Mulliken Speed Swing said to easily replace from 4 to 7 special-purpose machines, and featuring 180-degree boom swing. Photos and drawings show close-ups of important components. Attachments also illustrated. Bulletin P-158.

Write to the Pettibone Mulliken Corp., Dept. C&E, 4700 W. Division St., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 121. (Continued on next page)

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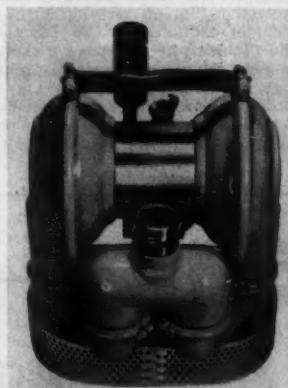
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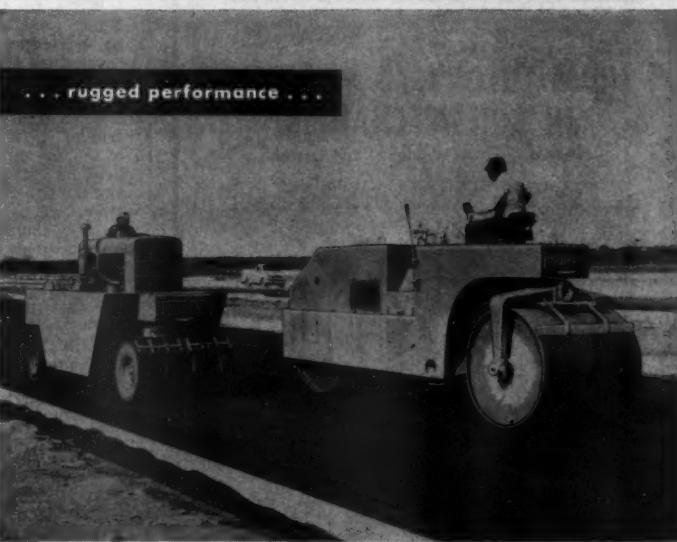
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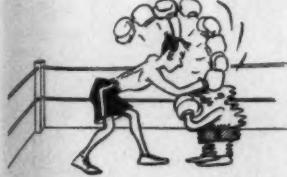


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OCTOBER, 1960

**Product Literature**—For job efficiency and economy make sure you have this product information

**Sealer for asphalt**—a bulletin on Para-Seal, a blacktop sealer coat to renew asphalt surfaces. According to the literature, water, acid, gasoline, and oil cannot penetrate Para-Seal to destroy adhesion; sunlight can no longer soften the asphalt.

Write to Paramount Industrial Products Co., Dept. C&E, 2717 E. 75th St., Cleveland 4, Ohio, or use the Request Card at page 18. Circle No. 92.

**Anti-rust concentrate**—a brochure describing Sarc, a compound which inhibits rust and corrosion in heavy-duty equipment cooling systems through the formation of a thin, protective film on metallic surfaces. Includes sections on the functions and problems of modern-day cooling systems, the value of using rust inhibitors, the year-round protection afforded by Sarc (both as a supplement to anti-freeze and as a constant protective agent during hot-weather op-

erations), and directions on when and how to use the compound.

Write to the Lubrication Engineers, Inc., Dept. C&E, 2809 Race St., Fort Worth, Texas, or use the Request Card at page 18. Circle No. 84.

**Curing compounds**—literature on Horncure concrete-curing compounds, with specifications included. Also complete data on the firm's semiautomatic hand sprayer.

Write to A. C. Horn Cos., division of Sun Chemical Corp., Dept. C&E, 2133 85th St., North Bergen, N. J., or use the Request Card at page 18. Circle No. 123.

**Truck crane**—a bulletin describing the Skagit Model L-20 Power Arm, a hydraulic truck lift with 5,500-pound capacity. Designed for one-man operation, the L-20 mounts easily on any standard truck frame and features a 13-foot reach from the

truck bed, with a 180-degree swing. Specifications furnished.

Write to the Skagit Steel & Iron Works, Dept. C&E, Sedro-Woolley, Wash., or use the Request Card at page 18. Circle No. 119.

**Engines**—an illustrated pamphlet describing 27 International diesel and carbureted engines in 4, 6, and 8-cylinder versions. Horsepower ratings range from 16.4 to 385; weights from 279 to 6,045 pounds. Pamphlet CR-764-K.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 34.

**Crushers**—a bulletin describing the full range of Symons primary gyratory crushers. Using charts, graphs, and photographs, it covers important design features, selection data, dimensions, screen analysis,

capacities, and operating data.

Write to the Nordberg Mfg. Co., Dept. C&E, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 178.

**Scrapers**—a well illustrated bulletin emphasizing the versatility of the Model D Tournapull. Drawings and photos detail many benefits.

Write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 114.

**Transmission service manual**—a 92-page service manual for the Fuller Model R-1160 RoadRanger transmission. Provides detailed information concerning the operation, lubrication, maintenance, and repair of the 9-speed RoadRanger.

Write to the Fuller Mfg. Co., Transmission Division, Dept. C&E, Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 179.



BOOKS

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By RICHARD H. CLOUGH, *University of New Mexico*. A discussion of the five basic management functions—organizing, staffing, directing, planning, and controlling—as they are applied to the construction contracting business. Each area is developed in a fundamental way to give the reader a basic working knowledge and a proper perspective. The book will also serve as a valuable reference on matters such as construction insurance, contract bonds and labor legislation. 1960. 382 pages. \$9.75

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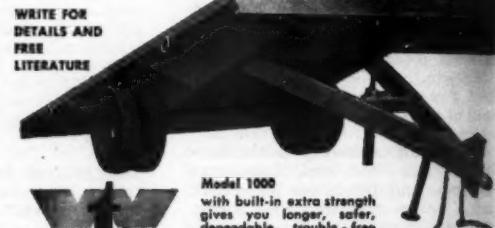
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OCTOBER

Floodlighting installation—a bulletin describing how to design floodlighting installation for typical storage and material-handling area. Includes general rules on mounting heights, type lamps, and number of floodlights, with a sample problem and solution. Bulletin OLP-1010.

Write to the General Electric Co., Dept. C&E, 1 River Road, Schenectady 5, N. Y., or use the Request Card at page 18. Circle No. 58.

## Avoid legal pitfalls

### Contractor not liable for building accident

**THE PROBLEM:** A contractor, complying with the specifications of a building owner, left a hole in the floor at the second-story level, which was protected by a railing. The owner caused this to be removed, and at the direction of the owner's superintendent, the contractor covered the hole with a sheet of  $\frac{3}{4}$ -inch plywood. Several months after the contractor had concluded the construction job and delivered the building to the owner, the owner's employee was injured when he drove a truck on the part of the floor which was covered by

plywood, causing the floor to give way. Was the contractor held liable for the injuries sustained by the employee?

**THE ANSWER:** No. (Belk v. J. A. Jones Construction Co., 272 Fed. 2d 394, decided by the United States Court of Appeals Sixth Circuit, approving a similar decision by the United States District Court, Eastern District of Tennessee.)

### Owner had status of general contractor

**THE PROBLEM:** An industrial company enlarged its plant and provided 54 per cent of all labor and materials needed, using its own employees and subcontractors. The remaining 46 per cent was let to a general contractor. Two employees of the latter were injured in the course of their work and received workmen's compensation from their employer and the Nevada industrial insurance law. Were they entitled also to sue the owner for damages, if the injuries were due to its negligence?

**THE ANSWER:** No. (Titanium Metals Corp. v. Eighth Judicial Court, 349 Pac. 2d 444, decided by the Nevada Supreme Court.)

The court said that the owner, for the purposes of the case, must be regarded as a general contractor in furnishing labor and materials, with the same status toward the injured men as if it had let a second independent contract on that part of the work which it did itself. Under state law the injured men, having received compensation from their employer, could not have sued a co-contractor, and so could not sue the owner who acted in the capacity of self-contractor.

### Nonresident contractor was served a summons

**THE PROBLEM:** An Ohio statute permitted a nonresident partnership to be sued by leaving a copy of a summons at the firm's "usual place of doing business" or with any member of the firm. A partnership composed of three men, none of whom resided in Ohio, had its principal office in California, and was engaged in completing a construction project in Kentucky. It established an office in Cincinnati solely to facilitate supervision of this project, and the person in charge of the office was the superintendent of construction. The partnership solicited no business in Ohio and had supervised no other projects there. A creditor sued the partner-

**Edited by A. L. H. STREET  
Attorney-at-Law**

*These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.*

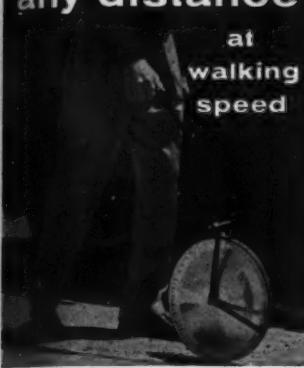
*ship, leaving a copy of the summons at the superintendent's office. Was that service valid?*

**THE ANSWER:** No. (Modern Contract Furnishings, Inc. v. Bishop International Engineering Co., 165 N.E. 2d 703, decided by the Ohio Court of Common Pleas, Hamilton County, Cincinnati.)

The court intimated that the serv-

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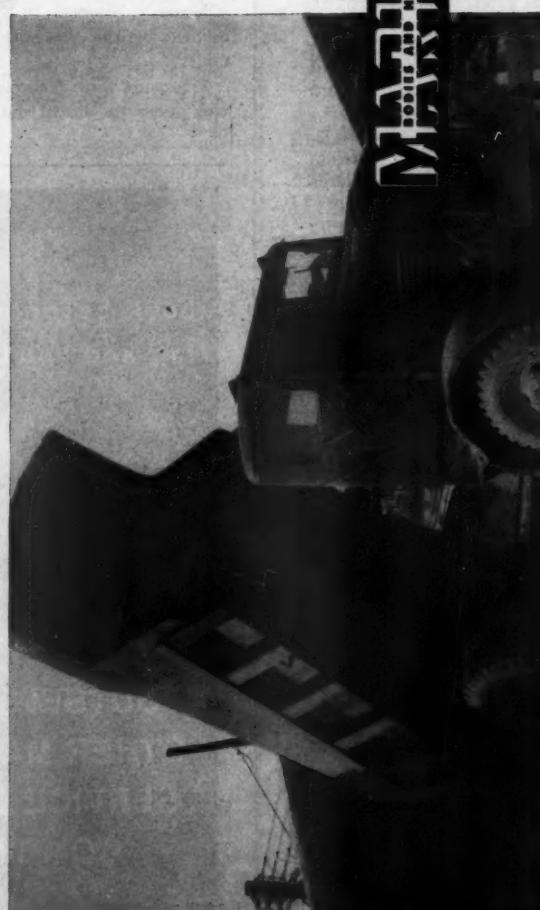
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## avoid legal pitfalls

ice of the summons would have been valid if the Cincinnati office had been maintained for general business purposes of the firm.

### Subcontractor's charge for modified work

**THE PROBLEM:** A municipal building contract was modified to provide that skylights be reworked on a time and material basis. The municipality knew in advance that this work would necessarily involve subcontracting of specialty work. It was necessary that the subcontractor supervise the work and be paid for the time used in such supervision. Were the general contrac-



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tors entitled to overhead or profit on account of the charge?

**THE ANSWER:** No, but they were entitled to reimbursement for the full amount of the subcontractor's charge, including his shop overhead. (Carrico v. City and County of San Francisco, 2 Cal. Rptr. 87, decided by the California District Court of Appeal, First District.)

### No competitive bidding needed in hiring rigs

**THE PROBLEM:** Certain contracts provided for the rental of road-building equipment, furnished with operators, for construction of secondary roads under the supervision of state highway department employees. Did the contracts constitute "road construction contracts" within the meaning of a statute that required the letting of such contracts under competitive bidding?

**THE ANSWER:** No. (Hall v. Commonwealth of Kentucky, 331 S.W. 2d 272, decided by the Kentucky Court of Appeals.)

The court said that the contracts merely involved the hiring of equipment with operators.

### Motorist claims damages from sewer contractor

**THE PROBLEM:** Material excavated in sewer construction was piled in the street. A motorist ran into the pile and sued the city engineer and the contractor for damages. Did the judge err in dismissing the suit (1) as to the city engineer, and (2) as to the contractor?

**THE ANSWER:** As to the city engineer, no. As to the contractor, yes. (Clausen v. Eckstein, 97 N.W. 2d 201, decided by the Wisconsin Supreme Court.)

The court said: The city engineer was under no official duty to place

warning signs or lights at the excavation and pile.

The city was not a party to the suit, so its liability was not considered although the sewer contract placed the responsibility for maintaining warnings on the city, not on the contractor. But a state statute read:

"Street Obstruction. All contractors doing any work which shall in any manner obstruct the streets or sidewalks shall put up and maintain barriers and lights to prevent accidents, and be liable for all damages caused by failure so to do. All contracts shall contain a provision covering this liability, and also a provision making the contractor liable for all damages caused by the negligent digging up of streets, alleys, or public grounds, or

damages which may result from his carelessness in doing such work."

The contractor had relied on the Potter, a city employee, to place proper warnings. On this point the court said:

"The contractor cannot avoid the duty imposed on him in this statute by delegating the performance of the duty to another. If the duty in fact is performed by another, such performance inures to the contractor's benefit; but if the duty is not performed, the contractor is charged with the failure and its consequences. Potter testified he lighted and placed all lights on the dirt pile. Immediately after the accident the light was not burning at the west end of the pile, where the plaintiff first came to it.

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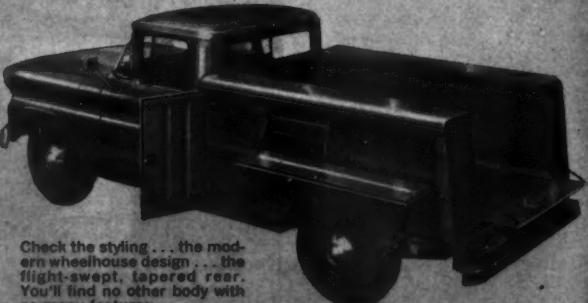
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CONTRACTORS AND ENGINEERS

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The light showed no signs of having been struck by an automobile."

### Accident suit brought by "gratuitous licensee"

**THE PROBLEM:** A new wing was being added to a hospital building, and a subcontractor had stacked metal sheets almost vertically on a subbasement floor. While work was in progress, the plaintiff, a hospital employee, went to the subbasement to read meters. He reached the meters by a safe route, but, returning by a different route, he touched the stacked metal sheets and they fell, injuring him. Was his damage suit against the subcontractor properly dismissed?

**THE ANSWER:** Yes. (Dishington v. A. W. Kuetell & Sons, Inc., 96 N.W. 2d 684, decided by the Minnesota Supreme Court.)

The case was decided by the court on the theory that one in possession of premises, whether as owner, contractor, or subcontractor, is not an insurer of the safety of one who comes upon the premises without special or implied invitation. The plaintiff was not so invited by the subcontractor. Although not a trespasser, he was merely what is known in law as a "gratuitous licensee," a permitted visitor. Aside from the plaintiff's own negligent conduct in knowingly exposing himself to an obviously dangerous condition, there was no reason why the subcontractor should have foreseen that the plaintiff, or any other person, would enter the workshop area—or if he did so that he would fail to discover a dangerous condition or fail to realize the hazard. The nearly perpendicular stack of sheet metal was in plain sight in a well lighted area, and it was obvious that the sheets might fall if they were disturbed by anyone passing by.

### Unambiguous contract cannot be contradicted

**THE PROBLEM:** A municipal sewer extension and installation contract provided that all streets broken into or damaged were to be resurfaced or repaved with like material "as hereinafter specified." The only specifications related to asphalt pavement and concrete pavement and driveways. The engineer's decision as to classification and acceptability of material was to be final. Was the contractor entitled to additional compensation for work done pursuant to the engineer's requirements that asphaltic material meeting the specifications under the contract must be used in repairing a number of streets that had an oil-penetration course?

**THE ANSWER:** No. (George v. El Paso County Water Conservation and Improvement District No. 1, 332 S.W. 2d 144, decided by the Texas Court of Civil Appeals, El Paso.)

The court ruled that the plain terms of the written contract could not be contradicted by proof of what was customarily done under sewer construction contracts not containing the specific provisions of this contract. Nor could the contractor claim additional pay on the ground that a member of the improvement district board had orally promised it.

### Contractor's liability for assault by employee

**THE PROBLEM:** While a road contractor's men were removing boulders from land, a supervising employee and the plaintiff, a brother of the landowner, quarreled. The employee, much more rugged than the plaintiff, unjustifiably struck him twice, breaking his jaw. Was the contractor liable in a damage suit brought by the plaintiff?

**THE ANSWER:** Yes. (Rego v. Thomas

Bros. Corp., 164 N.E. 2d 144, decided by the Massachusetts Supreme Judicial Court.)

The court said that the test of an employer's liability for an assault and battery committed upon a third person is whether the affair arises out of and in the course of work performed for the employer.

### Road contract was illegally awarded

**THE PROBLEM:** On the facts involved, was a county entitled to compel road contractors to refund payments they had received for performing contracts let in violation of a state statute requiring that such contracts be awarded under competitive bidding?

**THE ANSWER:** No. (State v. Fourth National Bank of Columbus, Ga., 117 So. 2d 145, decided by the Alabama Supreme Court.)

The court reasoned: The contract was one which the County Commission had power to let, subject to the requirement of competitive bidding. There was no claim that the contract had not been performed fully and in good faith without fraud or corruption. The circumstances were such that the county would have been liable for the reasonable value of the work and materials furnished had it refused to pay the contract price. Having paid the contract price voluntarily, a refund could not be justly claimed.

### Negligent blasting

**THE PROBLEM:** Blasting occurred for several months during construction. Owners of homes a half-mile away complained. The contractor could have avoided damage to the houses by using small charges of explosives, but he satisfied himself that no damages were being caused by setting up

oscillographs and making a pin test at the construction site. In the property-owners' suit, actual damage was proved, and a blasting expert testified that in such a case, on complaint of a nearby property owner, the contractor should determine at the site of the nearest house the degree of concussion resulting from blasts, and should then reduce the quantity of explosive used in each charge. Did the evidence justify an award of damages?

**THE ANSWER:** Yes. (Codell-Oman Construction Co. v. Sorensen, 273 Fed. 2d 703, decided by the United States Court of Appeals, Fifth Circuit, approving a decision to the same effect by the United States District Court for the Northern District of Alabama.)

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The HIAB 170 offers a range of lifting capacities from 6000 lbs. on the shortened boom of 5' to 2200 lbs. on a full boom of 17'. The boom length is easily adjustable through hydraulic control. Control is from either side of the truck cab.

Ideal for general maintenance work, the HIAB 170 will lift up to 30' above ground level at a maximum speed of 20' per second. Crane action is positive and accurate, 200° or 360° swing arc. When not in use the HIAB 170 folds snugly behind the cab, taking only 15' of space. This leaves the entire truck bed open for load.

Also available is the HIAB "Blimbo" Model 290—a smaller version of the HIAB 170, with similar design features.

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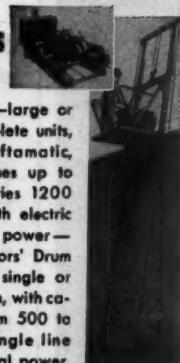


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## Bolting a railroad span

Once the switch had been made from riveting to bolting, fastening operations on the new CB&Q bridge picked up speed. Relatively inexperienced crews learned the technique of bolting after a minimum of instruction time.



**Midstream is no place to change horses,  
but the old saw says nothing about  
fastening techniques**

Having changed erection plans literally in midstream, Bethlehem Steel Co. is completing work on a 2,500-foot-long railroad bridge at Quincy, Ill., using high-strength bolts instead of field rivets.

The new span, being built for the Chicago, Burlington & Quincy railroad, is the first major railroad crossing to be high-strength bolted. Sched-

uled for completion this month, the structure will be connected by some 140,000 bolts, not to mention the rivets used in the initial phase of erection.

Bethlehem requested and obtained permission from the consulting engineers, Howard, Needles, Tammen & Bergendoff, to complete the structure with bolts after a shortage of experienced riveting gangs threatened to seriously delay the construction schedule. Requests for riveters had been broadcast from the Rockies to the East Coast without success, forcing

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### New officers nominated by Producers' Council

The Producers' Council has nominated a slate of new officers and submitted it to the members to be acted upon October 6 at the annual meeting in Chicago.

Elmer A. Lundberg, director of architectural services for the Pittsburgh Plate Glass Co., has been nominated for president. He is currently serving as first vice president. Donald A. Proudfit has been proposed as first vice president. He is marketing manager for the Simpson Timber Co., Seattle.

Nominated for second vice president was Robert W. Lear, director of marketing services for the American Radiator & Standard Sanitary Corp., New York, N. Y. Earl F. Bennett, director of architectural sales for the Koppers Co., Pittsburgh, has been proposed for secretary, and Hal Cramer, manager of agency and construction sales for the Westinghouse Corp., Pittsburgh, has been renominated for treasurer.

### Air Force engineer named to South Pacific region

The U. S. Air Force has assigned Col. Edward C. Gill to the post of South Pacific regional civil engineer. He represents the Air Force chief of staff in exercising design and review supervision over the Air Force military construction program in Arizona, California, Nevada, and Utah.

### Asphalt group names district engineer

Charles G. Grosvenor, Jr., is the new district engineer at Santa Fe, N. Mex., for the Asphalt Institute, College Park, Md.

Grosvenor is providing engineering service for New Mexico and west Texas under the supervision of division managing engineer Hugh A. Wallace at Dallas.

Grosvenor is a member of the American Society of Civil Engineers, and a former member of the New Mexico chapter of that society when he served with the New Mexico Highway Department.

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Bethlehem to adapt its plans to the less experienced labor crew available. Bolting—the technique of which can be taught in a short time—seemed the logical answer.

The bridge is made up of six girder spans and eight truss spans. Two shorter structures, a 716-foot Quincy Bay Bridge consisting of seven girder spans and a 296-foot state aid Route 7 bridge made up of three girder spans, are also part of the 4½-mile-long line change.

#### Replaces 62-year-old span

The new Mississippi River crossing replaces a span built in 1898 and in continuous use since then. The old bridge has been in a seriously weakened condition due to increased loads and traffic volume on this main rail line to the West Coast. The piers and deck of the old bridge have been so weakened, in fact, that rail traffic now slows to 8 mph to cross it.

A strong cross current, caused by wing dams built to divert the current when the present channel was formed artificially, also causes tow boats to run into the piers, which creates a further weakening factor. Finally, the old bridge has to be opened for all tow-and-barge traffic, causing delays in rail traffic.

The concrete piers that support the steel girders and trusses of the new bridge were installed by Kansas City Bridge Co. The piers rest on bearing piles that extend about 130 feet below water level to rock. LaCrosse Dredg-

ing Corp. built all embankments, including a portion 70 feet high. Hydraulic sand fill totaled 3½ million cubic yards.

Bethlehem crews started operations at the site last winter by building a small work harbor and an adjacent work area. Steel arrived by railroad and was transferred to material barges by a 50-ton-capacity crawler crane.

Early in February, assembly of a 50-ton-capacity tower derrick boat was begun. The derrick boat was used to assemble two sets of two flotation barges and falsework towers, which were then used to support the bridge steel during assembly and erection.

The 336-foot through truss was assembled in two halves, each half on a falsework tower mounted on two flotation barges measuring 120 x 32 feet. When high water had subsided, the barges were towed out and anchored between the piers. Assembly was then continued in place, with the truss halves about 13 feet apart and slightly higher than the piers.

When the two halves were ready to be joined together, the barges were pulled together and a riveting gang made the connections to form the one 336-foot-long, 50-foot-high truss. This job of connecting the two halves required about six hours' preparation; calm water and little wind helped the crews.

The connected truss was now ready to be placed on the piers. This was ac-

(Continued on next page)



About 6 hours were required to align the two halves of the through truss for connection prior to seating the assembled span on the piers. Calm wind and water conditions were essential to this operation. Rivets were still being used at this phase of erection.



The fully assembled through truss has now been seated on its piers, and one of the supporting barges has already moved out from under the span (right). Water was pumped into the barges to lower the span onto the pier shoes. This operation took about three hours.

## Look for the November issue of CONTRACTORS and ENGINEERS

with staff-written feature articles by field editors that include:

### CABLE SPINNING FOR THROGS NECK BRIDGE

One of New York City's first cable spinning operations for a suspension bridge in many years smashes the record for this work on similar-type spans. The job setup is detailed for the operations, which saw the wheels make 60 trips of 2,190 feet between anchorages in a 7½ hour shift.

### OCEAN QUARRYING FOR CORAL AGGREGATE

Contractors on Kwajalein, one of the island bases in the Pacific Missile Range, work out a good system for quarrying coral from a reef that is under water at low tide. Problems to solve? Drilling at low tide, blasting at high tide, and handling and crushing the tough material.

### LOADER-SCRAPER TEAM KEEPS YARDAGE MOVING

How to get more than 11,000 cubic yards of excavation as a daily average on an interchange job involving 1,700,000 yards of excavation is being demonstrated by a Maryland contractor. The key to this kind of production is his assignment of a loader—that fills trucks in 17 to 19 seconds—and 12 scrapers to the various cuts.

### A NEW WAY TO LAY PIPE

Check off the advantages a Milwaukee contractor has secured by substituting a 30-ton-capacity Travelift for an 80-ton capacity crane in laying sections of water line in the city. Use of the rig to handle pipe sections from stockpile to trench, and to set them in place, is only one. Plenty of pictures illustrate how the rig is making this an economical job.

### MECHANIZED SPREAD FOR CONCRETE PAVING

The modern way for stepping up production as a paving job is to mechanize wherever possible. Here is how one contractor conducts his operations with two big pavers working in tandem, followed by a train of finishing equipment on the Penn-Can Highway.

Many more feature articles—with information you can put to work for yourself—plus regular features, are in the November issue. If you want to save money, cut costs, or do a better job for less, check these pages for ideas you can adopt or adapt.



A 60-ton-capacity derrick car erects plate-girder spans for the new bridge. Each girder weighs about 45 tons, is 8 to 9 feet deep, and is anywhere from 84 to 105 feet long. The derrick's 70-foot boom picks up steel from an adjacent rail siding.

complished by pumping water into and thereby partially flooding the flotation barges on which the assembly rode.

Four 125,000-gph pumps, one per barge, were used. A total of 347,000 gallons of water was required to lower the barges sufficiently to land the truss and free the barges. Water was added in three stages. First, about 113,000 gallons was pumped in to sink the barge about one foot and land the truss on the pier shoes.

With the weight of the truss off the barges, they would tend to float higher again. Thus, an additional 227,000 gallons (equivalent to the weight of the assembly) was pumped in to lower the barges to where they

were just before the span landed. Finally, another 7,000 gallons was required to gain a one-inch clearance so that the barges and falsework could slip out.

It took about an hour to lower the assembly to the pier shoes, and about two hours to land the span. The truss came to rest on two fixed shoes and two expansion shoes. At the fixed end the crew slipped the bridge shoes over 2-inch anchor bolts and ran up nuts over the bolts. Molten zinc served as grout. The truss was connected to the expansion shoes with turned bolts.

Work on the seven deck truss spans involved dismantling the 68-foot-high falsework towers and setting up two small bents on each set of barges to support the deck trusses during construction. Crews leapfrogged the barges from pier to pier, with each being assembled slightly above the pier tops and the finished trusses then being lowered into place in the same way the through truss was seated. A complete deck truss span was erected in about three weeks.

During the summer, crews are working on the Route 7 overpass and the Quincy Bay Bridge, setting the girders with a 60-ton-capacity derrick.

By the middle of this month, the closing truss span is expected to be ready for landing. It will be floated over to the piers and lowered onto the pier shoes in the same manner as other spans were seated.

#### Dismantle old bridge

While the closing span is being erected for the new bridge, crews are removing one of three truss spans of the old bridge to open the navigation channel to river traffic. Removal of the span will be done with flotation barges, reversing the process of landing trusses on the new bridge. The removed truss will be cut apart for scrap. The rest of the old bridge and the piers will be removed later.

#### Personnel

H. E. Crider, manager of erection for the Western Erection District, is Bethlehem's official in charge of steelwork at the site. H. D. W. Bauer is project engineer. L. L. Lessig, Jr., is resident engineer, and C. B. Sandino is field superintendent.

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## distributor doings

Part of the industrial equipment display held at the Coliseum for "John Deere Day in Dallas." More than 6,000 visitors viewed the \$2 million array of machinery.



## Deere dealers meet in Dallas

From all over the U.S.A., Canada, and 15 other countries, more than 5,000 dealers of Deere & Co. met in Dallas, Texas, on August 30 for what was probably the largest gathering of sales-organization personnel of any equipment manufacturer. These dealers, together with about another thousand of Deere personnel, banking and finance executives, and the press, arrived the day before in a gigantic airlift operation on both regular and charter flights. On the

day following the meeting, most of this crowd of over 6,000 returned home.

What they saw was a one-day spectacular showing of a new line of tractors and related equipment. The majority of the dealers were in the agricultural line since the number one market of Deere & Co. is agriculture. However, according to William H. Hewitt, 46-year-old Deere president, the company's industrial sales amounted to \$48 million last year,

"and in not too many years we expect them to be from \$125 to \$150 million."

"John Deere Day in Dallas" began with a morning session in Memorial Auditorium where the dealers were entertained with a Dixieland band, an ice show, and were then shown color films of the new equipment. The movies were presented on a 5-sided screen in the circular arena. The novel screen was also used for closed-circuit TV speeches by Deere officials.

In the afternoon, the equipment



Deere's "New Generation of Power" includes this 4010 heavy-duty wheel tractor with a 740 loader and 51 backhoe. The bucket capacity is 5/8 yard.

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OCTOBER, 1960

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you can get  
factory-engineered  
parts and service

## for WISCONSIN ENGINES anywhere... at any time!

You can't predict service emergencies. But you can take positive steps to minimize time loss and costs when one strikes. For no matter when or where the need arises, you are always near one of the 2000 Authorized Wisconsin Engine Service Stations for on-the-spot parts and service.

You can always count on prompt, professional service to restore your Wisconsin Engine to like-new condition fast! Your Wisconsin Engine is cared for by factory-trained trouble-shooting specialists. They use Wisconsin parts that are factory-engineered to original Wisconsin Engine specifications and quality. The result:

better performance and longer life for your Wisconsin Engine and the equipment it powers.

You are protected even if you service your own, or if you rely on an independent repair shop or the original equipment dealer. Every Authorized Wisconsin Service Station can supply them with Wisconsin factory-engineered parts quickly.

Make it a point to specify Wisconsin factory-engineered parts — and service — for your Wisconsin-powered equipment. Send for complete Service Station Directory S-198, and for Service Bulletin S-261. Write Dept. C-20.

All Authorized Service Stations carry the full line of WISCONSIN PARTS:

pistons, piston rings and pins • valves and valve seat inserts • valve guides, locks, springs • connecting rods • gaskets and seals • oil filter elements • governor parts • spark plugs • magnetics • carburetors • fuel pumps • repair kits • cylinder heads • fuel tanks and many other parts.

**WISCONSIN MOTOR CORPORATION**  
MILWAUKEE 46, WISCONSIN  
World's Largest Builders of Heavy-Duty Air-Cooled Engines

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### GenerAc Sales Inc.

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### AT THE TOUCH OF A BUTTON

the Electrol GenerAc will supply shop-type electrical power from your truck, car or tractor — anytime, anywhere.

This high-output, 115/230-volt, 60-cycle alternator is available in a size for your every requirement.

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Retreads Do the job at half the Cost

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MODEL	High	Inter- mediate	Low	DEPTH REDUCTION
3-A-65	.754	1.00	2.221	
3-B-65	.804	1.00	1.239	
3-C-65	.754	1.00	1.239	
3-D-65	.804	1.00	2.221	
3-E-65	.804	1.00	1.74	
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3-G-65	1.00	1.32	2.221	
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Specify

Specify the MODEL

FULLER MANUFACTURING COMPANY

(Transmission Division)

KALAMAZOO, MICHIGAN

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For more facts, circle No. 408

## Black & Decker assigns; opens service branch

■ New sales and service appointments have been made by Black & Decker, Towson, Md., maker of electric tools. Gordon N. Anderson is hardware sales representative in the Chicago district, replacing Bernard M. Christy, who has resigned. Anderson will have headquarters at Minneapolis. James A. Smith, now industrial-automotive sales representative in the San Francisco district, has headquarters at San Francisco. George Rudat, new branch service manager at the Chicago factory service branch, replaces A. A. Lazar, who has resigned. Charles L. Perz takes Rudat's former position as branch service manager at the Pittsburgh factory service branch.

James J. Prendergast is branch manager at the newly opened factory service branch in San Diego. The branch, serving the San Diego, Calif. area, is at 3811 El Cajon Blvd.

## New Airco plant pipes oxygen to steel works

■ Air Reduction Sales Co., New York, N. Y., recently opened its newest liquid air separation plant at Butler, Pa. The plant, which has a daily output of 120 tons of oxygen, is supplying the Butler Works of the Armco Steel Corp., by pipeline.

The new Air Reduction plant, one of four at Butler, will also produce nitrogen and liquid argon. The other three facilities distribute gases to the area within a 500-mile radius.

## Expanded sales program set by Ford Division

■ Expansion of sales in the light industrial equipment market has been undertaken in a new move by Ford Motor Co.'s Tractor and Implement Division, Birmingham, Mich.

The division is establishing an expanded industrial sales organization, adding the line of products previously made by Sherman Products, Inc., which Ford acquired July 15; and selling components and complete products to original equipment manufacturers for inclusion in their products or sale through normal distribution channels.

J. B. Nicolls, Jr., formerly division export-import manager, is now assistant general sales manager of indus-

trial products. Three newly created departments will report to him: original equipment manufacturers' sales with F. W. Conover as manager; Ford Industrial Sales, with Harold Hank as manager; and allied equipment sales, with W. R. Howe as manager.

The industrial sales staffs at the division's three regional sales offices are being increased, and the division's 26 independent distributors and two sales districts are expanding the number of sales representatives employed.

The former Sherman Products plant is now known as the Royal Oak equipment plant of Ford Motor Co.

## Mid-Valley names construction manager

Mid-Valley, Inc., industrial building and engineering firm of Houston, has made William Oppel, Jr., construction manager. Oppel succeeds G. W. Wagner, who is now associated with the Manco Construction Co., Los Angeles. Oppel joined Mid-Valley in 1959 as manager of industrial relations. Before that, he was project manager in charge of the construction for heavy industrial projects throughout the U. S. and Canada.

## Goodrich tire test track

■ Fred P. Armstrong has been named resident engineer for the building of B. F. Goodrich Co.'s tire test track near Pecos, Texas. The 9-mile circular track, said to be the largest of its kind in the world, will be used to highway-test new passenger and truck tires at speeds up to 120 mph.

Before forming his own engineering firm in Pecos in 1948, Armstrong was a highway construction engineer with the Texas highway department.

## Kahn names design chief

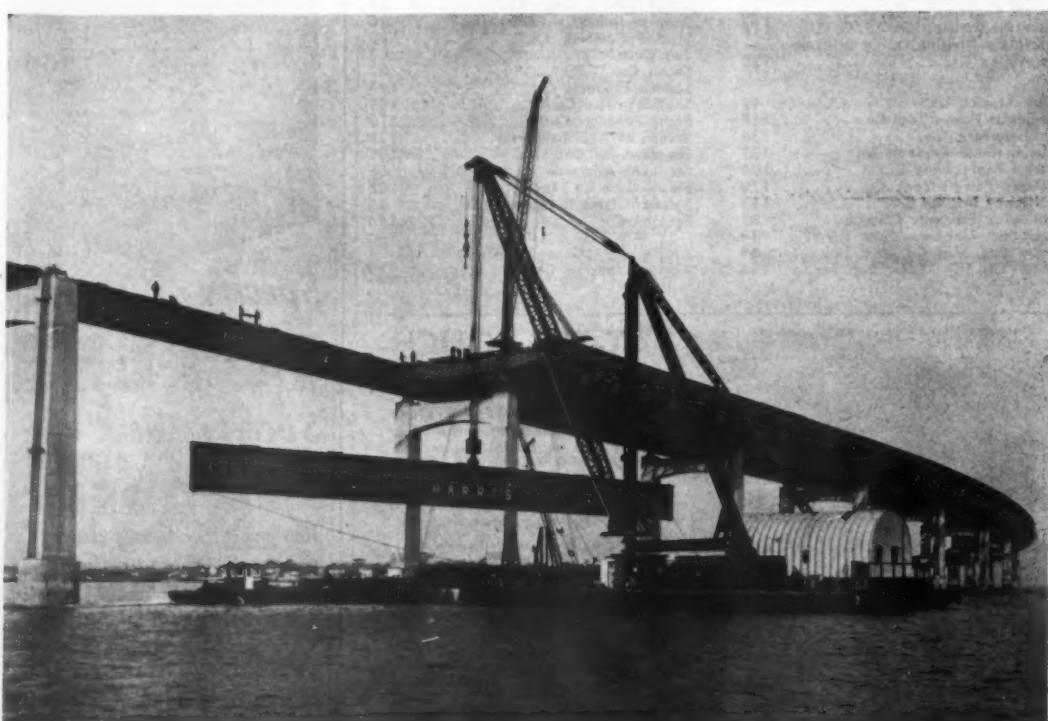
John Haro has been appointed chief architectural designer at Albert Kahn Associated Architects & Engineers, Inc., Detroit. An associate of the firm since 1957, he recently returned from nine months' study abroad on Harvard's Arthur W. Wheelwright Fellowship, an award made annually to a graduate of the university's School of Architecture and Design who has shown high achievement in the profession.

## Timken promotes

■ Two changes have been made in the engineering division of The Timken Roller Bearing Co., Canton, Ohio.

H. J. Urbach, formerly company executive engineer, is now director of engineering. Ralph E. McKelvey, former assistant chief engineer of the physical laboratories, is assistant director of engineering.

Urbach has served Timken as design and service engineer in the diesel fuel injection department; as mechanical engineer, special projects; and as works engineer. McKelvey has been test engineer, and project engineer of the physical laboratory before it was combined, last year, with the lubrication and railway research laboratories.



A 42,000 line pull Clyde Hoist handles a 125 ton pick for Harris Structural Steel Co., Inc., on the Bronx approach of Throgs Neck Bridge. A second Frame-12 Clyde Hoist operates traveler derrick for lifts on higher piers.

## HARRIS BUILDS BRONX APPROACH OF THROGS NECK BRIDGE WITH CLYDE



Borg mounted Clyde Hoist equipped with pony drums for vang line slewing. Clyde hoist and swinger operating traveler derrick.



**MEN AND MACHINES** combine to accomplish difficult construction to serve man's needs. But it takes highly skilled and experienced manpower and specialized and dependable machines! Harris' use of two Clyde Frame-12 Hoists for the erection of the Bronx approach provided just such an effective combination!

**CLYDE'S 'PLUS' FEATURES** are many and varied. Two outstanding features that assure fast, safe spotting are Clyde's large diameter brakes and internal expanding band friction clutches. Both are extremely smooth in engagement and release . . . both are Clyde advantages born of over 60 years of experience in building the finest hoists made. Clyde Hoists have all steel bed and side frames, high strength spur gears, over-size anti-friction bearings . . . but why go on? The money-making, money-saving features of Clyde Hoists are endless. Why not write for Bulletin 34 and study the specs on Clyde's complete line of Hoists? There is no obligation.

**"Quality is Always Foremost in Clyde Hoists"**



**CLYDE IRON WORKS, Inc.**

Established 1899

DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS  
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